

COMPUTER WORLD

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OCTOBER 1, 1984

VOL. XVII, NO. 40



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IBM launches two-fisted attack

Micro software offerings lead low-end charge

By Paul Kravitz
CW Staff

RYE BROOK, N.Y. — The long arm of IBM reached further into the microcomputer application software market last week as the company announced a series of integrated applications and a group of accounting packages that run on the IBM Personal Computer line.

Analysts and MIS managers differed in their reactions to the announcements. The analysts speculated that the moves would apply greater pressure to other micro software vendors, many of which feed off IBM's hardware announcements; the managers generally attached less significance to the introductions.

The integrated applications, IBM's Personal Decision Series, consist of 17 products that can be grouped in three categories: generic packages, such as a data base, word processing and graphics; packages that provide the capability to store Personal Decision Series files on IBM mainframes; and templates that include an appointment calendar and a mail merge package.

The IBM Personal Decision Series runs on See IBM page 10

Swallows Rolm in expanding communications and OA role

By Peter Bartlett
CW Staff

ARMONK, N.Y. — IBM last week announced it had reached an agreement to acquire 100% of Rolm Corp. in a merger that analysts believe will enable Rolm to speed development of new communications products and thereby expand IBM's role in the office automation market.

Industry analysts interviewed by Computerworld were in agreement that the merger will result in more rapid product development by Rolm and will fill a gap in IBM's office automation products. IBM's first acquisition in 22 years follows unsuccessful efforts to develop private branch exchange technology in Europe, an unsuccessful development effort with PBX manufacturer Mitel Corp. and a year-long equity interest in Rolm.

The analysts agreed that IBM will require fast product development from Rolm and that the major challenge to continued success of an IBM-owned Rolm will be maintaining the 16-year-old company's "culture" and independence.

The present management of Rolm will remain in place, and the company's sales force will also retain its present structure and "continue doing exactly what it is

doing now," according to Janice Corbin, marketing director with Rolm. IBM President Kenneth Osheim will remain in that position and report to IBM Vice-Chairman Paul J. Simon. Rolm's sales force "will preserve its separate identity," Quigley said.

The merger, according to Charles Robbins, an analyst with International Data Corp. in Framingham, Mass., "indicates IBM recognizes the importance of the PBX in [its] office strategy." Richard Inersheim,

corporate vice-president for research with the Gartner Group, Inc., a Stamford, Conn.-based research firm, expressed a similar view, noting, "IBM is concerned because the office is a major portion of [its] business, and it is late with communications products; and with the local-area network, it is struggling."

While the looming presence of communications-oriented AT&T may have played an indirect role in the merger decision, Inersheim said, "I think IBM is more concerned about the Japanese."

Robbins said he believed AT&T's presence and the purchase by Wang Laboratories, Inc. of a minority interest in See IBM page 6

IBM

TOP OF THE NEWS

The government's computer systems are highly vulnerable to fraud and abuse by hackers and employees, security experts claim. Page 4.

General Motors Corp. unveiled a plan to reassign up to 10,000 DP employees to the payroll of Electronic Data Systems Corp., which the auto manufacturer has proposed to purchase for \$2.5 billion. Page 11.

An increasing number of subcontractors are filling DP management roles, but major hurdles still litter the path of true job equality, Computerworld was told at

the recent Black Data Processing Association annual meeting. Page 17.



Eight hundred sixty sales of had read. A private-line user retains his postventure horror story. Page 67.

Datapoint Corp. is making its Attached Resource Computer network to IBM's Personal Computer in an effort to broaden the network's appeal. Page 77.

Gavilan folds, victim of micro wars

By Kathleen Sullivan
CW West Coast Bureau

CAMPBELL, Calif. — Late last week, Gavilan Computer Corp. became the latest casualty in the ferocious competitive portable computer market when the company revealed that it planned to cease production, lay off the remainder of its employees and turn over the company to its secured creditor, the California-based Bank of the West.

Although the firm had not yet released a public statement announcing the layoffs at press time, Wayne Bennett, Gavilan's vice-president of sales and one of the company's founders, confirmed that the reports of the company's impending closure were "essentially true." Gavilan's decision will affect approximately 60 employees, who will not receive severance pay, according to inside sources.

See GAVILAN page 4

Amdahl enters supercomputer marketplace

By Jeffrey Shuster
CW West Coast Bureau

SUNNYVALE, Calif. — Amdahl Corp. last week entered the supercomputing field with the announcement of two vector processors that reportedly have the same architecture and support the same Fortran programs and peripherals as the company's IBM-compatible scalar mainframes.

Amdahl supercomputer Models 1100 and 1200 outperform the Cray Research, Inc. X/MP-1 by 20% and 80%, respectively, and are aimed primarily at Amdahl's traditional customer base, according to spokesman Wayne McIntyre. The machines will be manufactured by Fujitsu Ltd. of Japan, which owns nearly half of Amdahl.

See AMDHL page 8



NEWSPAPER

NEWS

Court OKs use of liberal fraud law in Burroughs suit

By James Connolly
CW Staff

SAW FRANCISCO—Although it is a West Sacramento, Calif., company using a Michigan manufacturer, a suit distributor can rely on Minnesota's liberal consumer fraud laws in its claim that a Burroughs Corp. B700 minicomputer failed to work properly.

An attorney for Golden Eagle Distributing Corp., a West Sacramento garden tool distribution firm, said he will seek a trial date for early 1986 in Golden Eagle's fraud and negligence suit against Burroughs, now that a federal judge here ruled that Minnesota laws apply to the case. Burroughs was unavailable for comment at press time.

U.S. District Judge William Schwarzer ruled recently that Golden Eagle had a right to file its 1983 suit in a Minnesota state court, where statutes of limitation give plaintiffs six years — instead of California's three years — to file suits, since Bur-

roughs does some of its business in Minnesota. The case ended up before Schwarzer when Burroughs had it removed to federal court.

System 'couldn't be used'

Golden Eagle attorney Jeffrey Miller of San Francisco said his client bought a B731-304 with the Burroughs B700 RAE Business Management System program, including accounts receivable, accounts payable, payroll, general ledger and inventory, in 1977 for more than \$60,000. He said that the system, which the company replaced in 1983, "couldn't be used."

"It's our position that Burroughs knew the system wasn't right for us and might not have been right in general. We are complaining about the entire system. A lot of times you can't say which part — hardware or software — was at fault," said Miller, who is seeking at least \$50,000 in actual and \$1 million in punitive damages. His suit claims

that Golden Eagle, previously known as Chain Saw Sales, Inc., complained about the system and that Burroughs falsely claimed that repairs and modifications would solve the problem.

The Golden Eagle suit is one of about 150 filed by users of Burroughs' B700 and B800 mid-range business systems introduced during the mid-1970s. While no statistics are available on the 150 cases, several of those suits resulted in jury verdicts awarding users up to \$100,000. Numerous other cases have been "settled on the courthouse steps," with the users at least recovering the \$50,000 or more that they paid for their systems, according to one attorney.

'Knew they had a problem'

That attorney, who asked to be identified because of the terms of his own settlement with Burroughs, said, "Burroughs knew they had a problem with the B700 and B800 and, faced with the knowledge that the

systems had problems, they didn't disclose that information to their own sales people."

The attorney added that the B700 was not powerful enough to run the languages included with the system and that disk drive problems caused repeated error signs. He said his client received a system with a five-year-old disk drive that was sold as new.

He noted that one roadblock for those suing Burroughs has been Burroughs' requirement that attorneys settling cases give it any documentary material, such as memos issued by Burroughs, that they planned to submit as evidence in the trial.

In asking Schwarzer to dismiss Golden Eagle's suit, Burroughs claimed that the Minnesota filing was an unjustified attempt to use that state's longer statute of limitations and that any claims of fraud were related to incidents that had occurred more than six years before the suit was filed.

House committee will urge SSA to suspend Paradyne contract, bar future bidding

WASHINGTON, D.C. — The House Government Operations Committee today will release a report calling on the Social Security Administration (SSA) to suspend its \$118 million equipment modernization contract with Paradyne Corp.

The report, based on a lengthy committee investigation into allegations of subpar performance of Paradyne's data communications terminals and on two days of hearings [CW, Aug. 13, Sept. 24], further recommended that Paradyne be barred from bidding on Social Security contracts in the future.

The conclusions of the report are highlighted by recent developments concerning Kenneth M. Barry, the agency's former director of data communications responsible for the contract. Barry disappeared the day he was scheduled to appear at a trial stemming from charges that he allegedly sought to extort \$400,000 from a California company seeking to win the contract.

Paradyne is also facing a suit brought by the Securities and Exchange Commission, which has charged it with "fraud and deceit" in efforts to obtain the contract from the SSA.

A further development discussed in the report

concerns the seizure of computer tapes belonging to the SSA that contained records of the malfunctions of Paradyne terminals between September 1981 and April 1984. The SSA testified to the Government Operations Committee that the malfunction rate on Paradyne equipment was still unacceptably high, but that the equipment was still meeting the terms of the contract regarding availability.

John Wickline, the SSA's associate commissioner for systems operations, said last week the SSA was able to restore the records of malfunctions using paper records still in its possession.

The General Accounting Office (GAO) issued a report in August [CW, Aug. 13] suggesting that the contract between Paradyne and the SSA be reviewed for compliance, after it found that SSA officials had been lax in enforcing its terms to the point that it changed performance requirements to be favorable to Paradyne.

Paradyne President Robert Wiggins has resolutely defended the performance of the company's equipment and charged that Paradyne is being made the victim of a campaign to smear its reputation.



CORRECTIONS

The article "Study predicts links to cause repercussions through DP" [CW, Sept. 24] incorrectly stated that the study "End-User Micro-Mainframe Needs" is available at no cost from Input, Inc. The full study is priced at \$1,950 from Input, 1945 Landing Drive, Mountain View, Calif. 94043.

NEWS SUMMARY

Last week, Congress heard testimony on the vulnerability of federal computers to fraud and abuse/4

IBM has announced that President John F. Abt will assume the additional position of chief executive officer/6

General Motors Corp. has proposed a merger of its DP and communications divisions to Electronic Data Systems Corp./13

The Federal Communications Commission is studying a report on user reactions to bypass technology/22

CW all express their thanks: A strategic planning group has helped one devoted full operating company survive the

changes caused by divestiture, a company staff manager said... A microcomputer installation caused headaches for a pharmaceutical firm, according to one of its managers, but profit-and-loss program glitches were cured with a spreadsheet/34-35

While some reports suggested that problems with Control Data Corp. and Memorex Corp. disk drives may have resulted from imperfect coatings, one analyst believes the disk head may have been prone to warping/18

CW at Black Data Processing Associates: The number of minority employees in management positions are seen as increasing, but some companies reportedly still discourage minority managers... To succeed, managers have

to run their department like a small business, attendees were told/17-18

The preliminary findings of a Diebold Institute study indicated that national policies have an effect on the growth of information processing technology/26

A former Hewlett-Packard Co. employee charged with burglary and illegally copying computer tapes is free on bail after surrendering himself to police/28

A undercover "sting" operation has resulted in the arrest of two Silicon Valley computer chip brokers charged with attempting to buy stolen chips/30

CW at Federal Computer Conference: Bidding and receiving a good DP staff is one of the federal government's hard-

est challenges, speakers here said... Experts indicated that the role of artificial intelligence and expert systems in commercial applications will grow/32-33

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NEWS

Government's computers 'highly vulnerable' to abuse

Security experts say hackers and government employees pose potential threats

By Mike Smith
CIH Washington Bureau

WASHINGTON, D.C. — The federal government's computers — which provide services ranging from air traffic control to welfare checks — are highly vulnerable to fraud and abuse not only by outside hackers but also by federal employees, computer security experts told U.S. congressmen last week.

Richard P. Kusnerow, inspector general of the U.S. Department of Health and Human Services, cited such cases as a civil servant who diverted welfare checks to his own direct-deposit bank accounts and another who conducted his consulting business out of the agency's computer, noting it is track accounts receivable, send mailing lists and send messages to his clients.

"I believe in many ways the government is lagging behind the private sector in the area of computer security," concluded Robert F. Campbell, president of Advanced Information Management, Inc., a security consulting firm in Woodbridge, Va.

Alarmed by vulnerability

Rep. Dan Glickman (D-Kan.), who presided over the congressional hearing on computer security, said he is alarmed by the vulnerability of federal systems and is considering legislative activity next year to bolster security efforts.

The congressman said he may seek to require more security training for federal managers and establish either a new computer security institute or increase the role of the government's existing Institute for Computer Sciences and Technology (ICST).

Glickman accused the Reagan administration of ignoring computer security, a charge denied by an administration official. Joseph E. Wright, deputy director of the president's Office of Management and Budget, said the federal government recently instituted procedures for creating the first inventory of federal computer systems and for periodic reviews of the adequacy of computer management and controls, including security.

Wright said he would support a larger research and advisory role for the ICST, but opposed creation of a new government computer institute.

Though Wright said federal managers are now much more aware of the need for computer security, other witnesses indicated that security is severely lacking in some agencies. "I think we're fortunate we haven't had more problems in this area," Kusnerow said. "I don't feel comfortable about the vulnerabilities we have now."

The federal government has more than 50,000 mainframe systems and by 1990 is likely to have at least a half-million microcomputers as well, Kusnerow said.

He said studies by a task force of federal auditors show that most fraud cases involving federal computers consist of theft of cash or manipulation of benefit or payroll systems and that most abuse cases involve theft of computer time for outside businesses or entertainment.

Surprisingly, Kusnerow said, some of the pe-

trons had good employee performance evaluations, and a few had even received awards. "This preliminary finding appears to counter the notion that only poor performers are suspect," he said.

Moreover, the computer crimes generally are discovered only by accident, Kusnerow said. For example, the federal employee who diverted welfare checks to his bank accounts was detected by an alert bank clerk.

"The finding that more cases are found by accident than by any other means is alarming because it implies that federal agency computer systems have either inadequate controls or none at all," he testified.

Supports more managerial training

Kusnerow urged Congress to keep the pressure on federal agencies to improve security and said he supports more training for federal managers. "We must hold the people operating the system accountable," he said.

Campbell, the security consultant, recommended that Congress create a "blue-ribbon commission" to assess the nation's vulnerability to computer abuse. In addition, he urged Congress to charter a nonprofit research foundation to develop technical standards — such as the 1977 Federal Data Encryption Standard — and then promote their application.

Joseph B. Tompkins Jr., chairman of the American Bar Association's task force on computer crime, described the panel's recent survey on computer crime (CW, June 18) and urged it for federal legislation outlawing computer crime. He added that the task force is now studying the specific bills pending in the House and Senate, including the House-passed H.R. 5616.



On program by M. Smith



Kusnerow

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GAVILAN from page 1

C. W. Rea, who took over as Gavilan's president last August, was not available for comment. After becoming president, Rea, a partner in New Venture Associates, a San Francisco-based venture capital firm that has invested \$3 million in Gavilan, laid off 55% of the work force and cut prices on Gavilan's line of Mobile computers. Gavilan also tried, without success, to secure a buyer for the troubled firm, analysts said.

David E. Gold, a high-tech consultant to the venture capital community, predicted that the news of Gavilan's closure would not take the

industry by surprise. "Anyone who looked closely at the company in the last couple months would have seen that it was playing an end game," Gold said.

Gold said Data General Corp.'s recent announcement of a 9-ft portable computer, which reportedly offers more functionality at a lower price than Gavilan's models, was the "final nail in Gavilan's coffin."

Although it had raised more than \$31 million in venture capital financing and was one of the first to introduce a briefcase-size computer (in April 1982), the company was plagued with management problems, production delays and technical setbacks, industry observers said.

Second-class postage paid at Framingham, Mass., and additional mailing offices.

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NEWS

Akers tapped for IBM chief exec

By Peter Bartel
CW Staff

ARMONK, N.Y. — John F. Akers, who was named president of IBM 20 months ago at the age of 48, will assume the additional responsibility of chief executive officer from IBM Chairman John Opel in February, IBM said last week.

Opel, who was named chief executive officer in January 1981, will remain as chairman. He will be 60 in January.

The announcement was no surprise, according to Stephen McClellan, vice president of Salomon Brothers, Inc. "This has been in the cards for a long time," he said. "Akers has been thought about and aimed at the top management slot."

Regarded by many as personable and candid, Akers has become an increasingly visible point man for IBM during the past year.

Akers was hired by IBM as a sales trainee in 1960, following his graduation from Yale University and a tour of duty as a flyer aboard a U.S. Navy aircraft carrier. He was appointed vice-president of IBM's data processing division in 1973 and elevated to division president a year later. Following several other top management posts, he was elected a senior vice-president in May 1982 and elected IBM president and a member of the board of directors in February 1983.

McClellan said Opel was characterized as a thinker who was good for the company during the 1970s. "How it's a different ball game now," he said.

"Akers is action-oriented, youthful. He is representative of the new IBM willingness to take big risks, to move into new markets," McClellan asserted.

ROLM from page 1

PBX-manufacturer Intecom, Inc. had some impact on the Rolm acquisition. "Clearly, AT&T is much more likely to strengthen its base in computers in response to IBM strengthening its base in communications," he said. Robbins added that he would expect Wang "to seriously reevaluate" its relationship with Intecom as a result of the Rolm acquisition.

When parties to joint ventures recognize real business opportunities, he continued, "they either disband or get closer together."

IBM last year (CW, June 20, 1983) purchased a 15% interest in Santa Clara, Calif.-based Rolm and agreed not to purchase more than 36% of the PBX manufacturer. IBM has since increased its ownership to 25% of all outstanding shares. Rolm's Carney said the agreement provided for stock purchases in excess of 30% if Rolm so requested. The merger, she said, "was Rolm initiated."

Wholly owned subsidiary

Under the terms of the \$1.3 billion merger agreement, which is subject to the approval of Rolm's shareholders, Rolm would become a wholly owned subsidiary of IBM. Each Rolm share would be surrendered in exchange for \$70 worth of IBM debentures, paying 7.75% interest and convertible at some point into shares of IBM stock at 125% of the average price of IBM stock during the 10 days prior to closing of the merger.

There was general agreement among analysts that the minority ownership in Rolm already held by IBM was not sufficient to meet IBM's needs of developing PBX equipment that would be compatible with its processing equipment.

According to Michael Gernan, an analyst with E. F. Hutton & Co., "IBM has decided the opportunities in the convergence of telecommunications and computers are such that [it wants] to accelerate the rate of progress."

That acceleration, he added, would place a great deal of pressure

on the profit margin of an independent Rolm.

Innovation of the Gartner Group said IBM apparently "didn't think Rolm was going fast enough" in the development of office PBX systems. As a result of the merger, he added, IBM will be able to speed up and exert greater control over Rolm's development efforts.

The minority interest IBM held in Rolm and the two seats on Rolm's board of directors, apparently "weren't achieving many of IBM's goals," in the opinion of IDC's Robbins. He pointed out that Rolm,

with revenues last year of \$608.7 million, is a relatively small company compared with IBM, a \$40 billion company, and may have found it difficult to coordinate product development with IBM's many divisions.

Charles Federman, an analyst with Fort Lee, N.J.-based Broadview and Associates, which monitors mergers and acquisitions in the computer industry, said the merger is "clearly number two" in size this year behind the recently agreed-to \$2.5 billion acquisition of Electronic Data Systems Corp. by General Motors Corp.

The merger should not provide any problems in continued success at Rolm, Federman said, "as long as Rolm's top management takes care to keep the environment [Rolm employees] have had there." Robbins said maintaining its "creative culture" will be one challenge for Rolm. "How long its most talented people will stay with the company if [it doesn't] have that culture is a question," he said.

Immershen said he does not expect the merger to have any major impact on Rolm's organization and that it will be retained intact. Gernan agreed, noting, "IBM has shown a far higher degree of flexibility over the last few years than previously." Gernan added that IBM's structure for developing and marketing its Personal Computer products represented "a revolution" in comparison with earlier years and reflects IBM's ability to adapt to the changing marketplace.

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Chicago, IL
October 9
The Westin Hotel
Dallas, TX
October 17
The Registry Hotel
Denver, CO
October 12
The Heritage Hotel
Hoboken, NJ
November 14
The Sheraton Heights
Milwaukee, WI
November 7
The Plaza Hotel
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October 30
Rollins South Hotel

Monroeville, PA
October 17
Rosenbaum Hilton
International
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Philadelphia Airport
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NEWS

Amdahl software tools aim to optimize Fortran code

By Jeffrey Sauter
San West Coast Bureau

SUNNYVALE, Calif. — A supercomputer operating system that functionally and operationally resembles IBM's MVS is only one of several Japanese-developed software products that highlighted Amdahl Corp.'s debut in the vector processor arena last week.

Complementing Amdahl's Vector Processing System (VPS) control program is a package of application development software tools aimed at helping supercomputer users to edit, debug, compile, test and optimize their Fortran code. Together, the tools form Amdahl's Vector Processor Application Development System (VP/ADS).

Like the VPS operating system, VP/ADS was written by Fujitsu Ltd. and is intended to harness the power of Amdahl's first two supercomputers, the Models 1100 and 1200, and to simplify their use and installation, according to Wayne McIntyre, director of Amdahl's special-purpose systems.

In essence, VP/ADS consists of seven development aids:

- Fortran 77, a scalar compiler that converts IBM Fortran source code into its Amdahl Fortran counterpart.
- Fortran 77/VP, a compiler that automatically vectorizes guides scalar statements or subroutines.

■ Interactive Vectorizer, which helps to fine-tune vectorized code and thus optimize internal throughput by estimating each Fortran statement's execution time.

■ Fortune, another fine-tuning aid that analyzes Fortran 77 applications and suggests ways of

Like VPS, VP/ADS... is intended to harness the power of Amdahl's Models 1100 and 1200.

testing and improving them.

■ Dock/Port 77, an interactive debugger that displays source code on the left side of a terminal screen and user-selected results on the terminal's right side.

■ Scientific Subroutine Library, a set of mathematical subroutines for the Amdahl supercomputers' built-in scalar processors, which conform to IBM large-systems architecture and run 870-style software.

■ Scientific Subroutine Library Version II/VP, a similar package of subroutines for the 1100's and

1200's vector processors.

Under VP/ADS, all program development takes place on a scalar processor running MVS or MVS/XA. The general-purpose front-end machine, which can include any model of IBM or IBM-compatible mainframe, is loosely coupled to the Amdahl supercomputer, McIntyre said.

Once an application is compiled on an MVS front end, the resulting IBM Fortran code goes through Amdahl's Fortran compiler and is transformed into Fortran 77. The purpose of the conversion is to test the program for errors that might create problems in the future, McIntyre said. At this point in the development cycle, the code remains in scalar form.

In the next step, Fortran 77/VP is pressed into service to translate the scalar statements or subroutines into vector instructions automatically, McIntyre explained.

Finally, he said, the VP/ADS's various fine-tuning aids come into play and allow Fortran programmers to optimize the efficiency of their newly vectorized code.

For both the 1100 and 1200, a complete set of software, including VPS and VP/ADS, licenses for \$16,000 per month.

Amdahl is headquartered at 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

AMDAHL from page 1

More users of Amdahl's existing 180 series processors are creating sophisticated simulations and mathematical models for business applica-

tions ranging from forecasting and planning to product design and testing, McIntyre said. Such tasks frequently complement conventional MIS applications and typically demand so much raw "number crunch-

ing" power that they are virtually impossible to perform without ultrafast supercomputers.

To date, very high-speed supercomputers have probably been more closely associated with scientific and technical environments than with business applications, where the machines have made only comparatively modest inroads.

One reason for the lack of widespread commercial acceptance is that large-scale vector processors typically incorporate a fundamentally different architecture from their scalar counterparts and thus have proven difficult to integrate with conventional MIS operations, according to McIntyre.

In short, supercomputers and general-purpose processors historically have been separated by a compatibility barrier that Amdahl's Models 1100 and 1200 are expressly intended to surmount, he noted.

Both machines are based on the same IBM 370-class instruction set as IBM's 3080 and Amdahl's 580 series. But Amdahl has added to that set 58 vector processing instructions that reportedly allow the Models 1100 and 1200 to perform up to 267 million floating-point operations per second (MFlops) and 553 MFlops, respectively.

Because of their architectural similarities to IBM 370-style mainframes, the two supercomputers are said to support the same external storage modules and terminals as Amdahl's 580 series machines, with an aggregate channel speed of 72M byte/sec.

The Models 1100 and 1200 also support a Japanese-developed operating system that uses the same formats, job control language, data set organizations and commands as MVS. Like MVS/XA, the Vector Processing System control program reportedly accommodates 31-bit addressing.

To further ensure compatibility with IBM 370-style scalar mainframes, Amdahl's two supercomputers support Fortran 77, which runs 10% faster than IBM Fortran, according to McIntyre. Fortran 77 is said to be compatible with its IBM counterpart at the object code level.

Thus, Fortran programs running under MVS or MVS/XA can be transferred from a general-purpose IBM or IBM-compatible CPU and can be executed on the Models 1100 and 1200 without modification.

Easy installation

Because of their resulting compatibility with IBM scalar mainframes, the Amdahl supercomputers can reportedly be installed as easily as a 580 series processor and can coexist with the mainframe in the same data center. In addition, the Models 1100 and 1200 can take advantage of the same Fortran programmers who have traditionally written code for general-purpose CPUs, McIntyre noted.

The Models 1100 and 1200 are built around the same emitter-coupled logic and packaging technology as their 580 series sister systems and are air-cooled, he said.

Although both number crunchers boast the same 15-nsec cycle time, the Model 1200 produces eight results per cycle — twice as many as the Model 1100. The faster machine also supports up to 256M bytes of internal memory, compared with 128M bytes for the Model 1100, which can upgrade to a Model 1200 in the field, McIntyre added.

Excluding software and monthly maintenance charges, a 64M-byte Model 1100 with 16 channels sells for \$9.2 million. A 128M-byte Model 1200 with the same number of channels costs \$13.7 million. Both systems reportedly will become available during the second quarter of 1985.

Commenting on the introductions, William Rastbrook, an IBM analyst with the investment firm of Kidder Peabody & Co., said the machines "look like solid introductions with good technology that will probably allow Amdahl to achieve its goal" of selling six of the machines in 1985. "But," he added, "I'm a little surprised that they still haven't received any orders for the products, since they've been talking to their customers for six months."

Amdahl is headquartered at 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

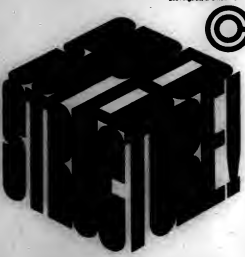
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NEWS

IBM from page 1

any IBM Personal Computer with the exception of the PCjr. The series requires 56K bytes of random-access memory (RAM), two double-sided disk drives and IBM's PC-DOS 2.0 or 2.1 operating system. With IBM's PC-DOS 3.0, 320K bytes of RAM are required. The line consists of:

■ **Data Edition**, a \$250 data base manager required to run any other Personal Decision Series package. The product performs arithmetic calculations on a file, provides five levels of subtotals on sorted data and controls column spacing, line skipping and page start, according to IBM.

■ **Reports-4 Edition** (\$160), a report writer, reportedly provides customer-designed layouts up to 342 characters long, allows users to add

basic statements to a predefined report cycle and creates up to 10 tailored screens.

■ **Graphs Edition**, priced at \$200, reportedly enables the user to create 13 types of presentation-quality graphics and charts, including line, bar, charts, surface, pie, scattergram and text charts.

■ **Words Edition** (\$150) is said to feature underline and bold printing, accented characters, automatic defaults and multiline headings and footnotes.

■ **Plans Edition**, a \$150 spreadsheet, reportedly features graphics and report capabilities, allows the user to specify calculation sequences and sorts rows on any column in ascending or descending order.

■ **Plans+ Edition** (\$300), an advanced business planning and modeling package, breaks summary

spreadsheet into detail, consolidates detail into summary spreadsheets and provides transcendental functions for sine, cosine and tangent, according to IBM.

Template applications

■ **Template applications** include Mailing Label Edition, Prospect Tracking Edition, Client Time/Cost Accounting Edition, Appointment Calendar (which requires a hard disk) and Asset Catalog. Each template costs \$50, except for Appointment Calendar, which sells for \$70.

■ **Attachments** allow Personal Computer files to reside on IBM mainframes and be printed by mainframe devices. To store the files, a Personal Computer and a mainframe attachment is required. Attachment/36 Edition (\$150), running on the Personal Computer, works with Attachment/

36 (\$1,060) on an IBM System/36. Attachment/770 Edition (\$300), resident on the Personal Computer, in conjunction with Attachment/770 (\$20,000) or Attachment/770 (\$16,000) provides access to other mainframes.

IBM also announced a \$70 computer-based training program for the Personal Decision Series programs.

The IBM Management Series consists of six accounting programs priced at \$695 each: general ledger, accounts payable, payroll, inventory accounting, accounts receivable and order entry and invoicing programs. Computer-based training courses for each application, priced at \$96 each, were also introduced. Accounting Extensions (\$345) and Financial Extensions (\$545) provide bridges between Management Series and Personal Decision Series programs.

IBM also announced a series of extended support services for the prod-

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ucts. The services range from a \$50 update to a \$225 extended support subscription, which includes tips and techniques on how to use the program, maintenance and access to IBM telephone assistance.

IBM said that it was testing the two lines of products to determine if they may under IBM's Topview operating environment.

Threat to small companies

Analysis viewed IBM's entrance as a threat to small software companies. Chris Christensen, analyst at the Yankee Group, a Boston market research firm, predicted that smaller firms would be forced to lower prices, spend more money to market a product and write new types of packages, such as desk organizer programs, rather than vertical packages like word processor packages.

Wall Street, meanwhile, reacted to the announcements with an attack on the stocks of Lotus Development Corp. and Ashton-Tate, both of which were heavy losers last week. Analysts felt the products of the two companies could be adversely affected by the IBM micro software announcements.

Corporate managers, on the other hand, were unimpressed with the IBM announcement. "When IBM announces a new piece of hardware, we jump," a personal computer administrator at a Big Eight accounting firm, noted. "But when they make a software announcement, we tend to ignore it. IBM's record for software support and quality products is not impressive."

Ray Barron, manager of the information center at Michigan Consolidated Gas Co. in Detroit, added: "Just because a company like Lotus announces Symphony or IBM announces its package does not mean we will buy it. The software has to offer us something new or different to merit our support."

IBM is located at 800 King St., Rye Brook, N.Y. 10573.

NEWS

GM plan would transfer up to 10,000 DP workers to EDS

By John Gelfond
CW Staff

DETROIT—General Motors Corp. last week unveiled a proposal to reassign as many as 10,000 DP and communications workers to the payroll of Electronic Data Systems Corp. (EDS), its newly won partner. Observers believe this may be the first step toward transferring all GM data processing responsibilities to EDS.

The employee transfer program was outlined in a GM proxy statement seeking shareholder approval for the company's proposed \$3.54 billion acquisition of EDS [CW, July 9], the Dallas-based computer services company founded by H. Ross Perot. A spokeswoman for EDS said the transfer would become effective following a Oct. 18 stockholders meeting if the takeover plan wins approval.

"GM expects that EDS' expertise will be of great value across a broad spectrum of GM's data processing operations," the proxy stated. "EDS' skills in providing data processing, health care administration and computer services on a cost-effective basis... will benefit GM by permitting us to control more effectively our health insurance costs, increase GMAC's [General Motors Acceptance Corp.] DP capabilities and improve the delivery of computer services throughout the corporation."

Up to 10,000 EDS employees

According to the EDS spokeswoman, the transfer plan could involve as many as 10,000 employees in GM's MIS and DP operations. She said EDS anticipates that "the majority of people in the GM data processing organization will be put on our payroll." If the transfer takes place, it would increase by some 70% EDS' employee force of 14,000. A GM spokesman declined to state the number of DP personnel the company employs.

The move seems to be an initial step by GM toward handing all responsibility for its DP and communications services over to EDS. That wider reorganization was briefly hinted at in the June 28 announcement of the EDS acquisition proposal. The announcement said that GM intended to apply EDS' systems and processing techniques throughout the corporation.

"Merging the EDS and GM communications facilities and personnel will result in an extremely effective worldwide voice and data communications network," the announcement stated.

One GM DP worker said the company plans to combine its divisional data centers into regional operations under the control of EDS to gain "economies of scale and the benefits of consolidated technical expertise." The employee, who asked not to be named, said it is clear that EDS will take over DP services for the automotive giant.

"It is apparent to us that EDS has already assumed responsibility for that. EDS has always maintained an approach that leans toward fairly large regional data centers as opposed to GM's decentralized approach. We certainly are apprehensive about whether or not they will adopt a regional approach that may require employees to be relocated or let go," the worker said.

EDS currently maintains five re-

gional data centers: three in Dallas, none in Sacramento, Calif., and one in Camp Hill, Pa. "Our data centers are set up with a regional concept, and we do processing for our customers all over the U.S. out of these data centers," the spokeswoman said. "I think the arrangement with GM might be similar to that."

GM currently operates more than 30 divisional data centers, the spokeswoman said, some of which are under the control of division general managers. GM is believed to maintain the world's largest nongovernmental data processing organization, a claim the spokeswoman would not confirm. He declined to comment on whether the employee transfer proposal

would require workers to relocate.

According to the EDS spokeswoman, neither company has formulated plans to relocate workers under the transfer scheme. "We just don't know at this point whether people will be asked to relocate. We have a lot of work in Detroit, so I think that, at most, only a very, very small percentage of them will be asked to move," she said. The companies are currently working out the details of the salary and benefits packages for the GM workers that would be transferred to EDS payroll.

"There is tremendous uncertainty among the employees as to where we will work next or if we will be working at all," the unidentified GM work-

er said. "In addition, the companies have, in the past, had widely varied wage and benefit structures, with EDS being less generous. We have been given no specifics about the wage and benefits changes that would be involved. The situation is nerve-racking and frustrating."

The worker said the company has begun to move EDS employees into management-level positions within GM's DP operations, a statement that was only partially confirmed by the EDS spokeswoman. "There are people in there right now who are heading up study teams to investigate what needs to be done, where we would best fit in and what steps can be taken right now," she said.



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NEWS

Bypass technology sparks mass movement of large

Bypass seen as way of avoiding regulatory uncertainty

WASHINGTON, D.C. — "A mass movement" is under way among large companies to find alternatives to local-exchange services.

So said the Institute for Corporate and Government Strategy (ICGS) in a report describing user reactions to bypass technology.

The report, produced for Nynex Corp., was recently submitted to the Federal Communications Commission. The FCC is wrestling with the question of whether to impose access charges on residential and single-line business users and has asked for comments from interested parties.

A key point of the ICGS survey is that telecommunications managers see bypass as a possible way of getting around the regulatory uncertainty created by AT&T's divestiture and recent FCC rulings. Economics is another major driving force, according to the report: While charges for telephone-company-provided services are rising, bypass technology is providing opportunities to reduce costs.

ICGS said the desire to reduce costs is leading to a "consensus . . . that everyone should have an integrated voice and data network." Historically, "buyers segmented their total needs," but "now that technology exists which makes . . . alternatives a practical possibility, they are thinking in terms of their total needs."

ICGS also concluded that most de-

cisions by respondents to its survey "are made on knowledge of currently available options and costs. Future technical improvements or potential cost changes are often ignored. Thus, many decisions are made on the basis of incomplete knowledge of all the options available."

Decisions to make

Detailed comments from T. Travers Waltrip, vice-president for telecommunications at Travelers Insurance Co., Hartford, Conn., revealed some decisions currently faced by telecommunications managers.

Described by ICGS as an "especially experienced telecommunications manager," Waltrip has yet to decide the extent to which his company should use bypass facilities.

Travelers has a total of 35,000 employees, including 10,000 at its headquarters. Its communications traffic is 80% voice and 20% data. A 9,000-line Centrex system serves personnel in Hartford, and there is "a scattering of [private automatic branch exchange] in the field. Travelers has two remote data centers connected by satellite and terrestrial 1.5M bit/sec circuits. The centers are linked by 56K bit/sec Digital Dataphone Service channels to remote concentrator nodes, and the concentrators are connected to end users by 9.6K bit/sec dial-up facilities.

Travelers is very much interested in local-area networks, Waltrip indicated. "Since we are an IBM shop, our strategy is to follow the IBM token-ring future. . . . Our basic decision is that . . . we will put in the IBM [local-area network] media" in all new and renovated company buildings.

Regarding interconnection of these local-area networks, Waltrip said there were several options and that the company would choose the most cost-effective one. One option is to use facilities obtained from Southern New England Telephone Co. or its Sonoscor Systems subsidiary; another is to invest in a private microwave

system. Pending an economic study of the alternatives, the decision is on hold, he said.

Waltrip also said he was uncertain about the company's long-distance communications plans. "We are a strong believer in the upcoming [AT&T Communications] fully digital network as it is evolving. We feel that our decision in the future will either be that of buying service through [Integrated Services Digital Network] from [AT&T Communications] and the operating companies . . . or we will buy wholesale digital pipelines . . . and do the bandwidth allocation ourselves."

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NEWS

companies seeking alternatives to local exchange

Telephone companies grossly overstating bypass threat

By Phil Ivers
OF Washington Bureau

WASHINGTON, D.C. — Local telephone companies are grossly overstating the bypass threat, according to several corporate telecommunications users and some groups.

That was the conclusion from respondents to an ongoing inquiry into bypass launched by the Federal Communications Commission in March. In addition, the respondents suspect that the carriers have an ulterior motive — to scare the FCC into imposing further restrictions on bypass that would raise communications costs for private-line users and would restrict use of bypass facilities.

The FCC study was launched shortly after the U.S. Congress deferred the commission's proposal for an access surcharge on residential and single-line business users. The basic aim of the inquiry is to gather evidence to convince Congress and other opponents to accept a possibly modified surcharge for residential and single-line business users. If such fees were imposed, rates for multi-line business users would drop significantly and, according to local telephone companies, the bypass threat would also diminish considerably.

But a key question is whether bypass would diminish enough to make further FCC regulatory action unnecessary.

'Drastic statutory tools'

"Many parties have argued that bypass by private users... require drastic new regulatory or statutory tools to preserve universal service," said the International Communications Association (ICA), a users group composed of major U.S. corporations that was among those responding to the FCC inquiry.

The proposed tools, according to the ICA, include regulations that would "insulate local-exchange companies from [inter-Local Area and Transport Areas] competition," restrictions that would "limit private-line customers in their use of bypass facilities" and impose separate bypass fees on private-line users to compensate telephone companies for "the insurance of having regulated facilities available from a carrier of last resort."

These proposals came up last year in Congress during the debate on FCC access charges, according to an ICA spokesman, and since then in a number of states during hearings on access charges and on telephone com-

pany rate increase requests. ICA expects that in coming months the proposals will be debated further in Congress as well as in states.

ICA surveyed its members in response to the FCC's request for data on bypass. Based on responses from 187 companies, ICA concluded that "the quality and availability of existing facilities," not saving costs, is the biggest reason for bypass. Other users groups, relying on similar though smaller surveys, came to essentially the same conclusion. Those groups included the Association of Data Communications Users, Association of American Railroads and the Committee of Corporate Telecommunications Users (CCTU). The CCTU's survey was put together by Bethesda Research Institute (BRI), a Bethesda, Md., consulting firm.

The significance of quality and availability (and not the price) of facilities as the main reason for bypass was explained by BRI. Because "responsiveness to customer needs" will determine the speed and extent of migration to bypass facilities far more than any other factor, the problem appears "to be correctable by the phone company itself," rather than by the FCC through further regulation of bypass.

This same basic thought was echoed by Holiday Inns, Inc., one of several individual users responding to

the FCC inquiry. Requiring private networks to pay part of the public network's cost is "totally inaccurate," said Holiday Inns' Vice-President D. C. Jones. The public network does not provide adequate response time and will not support large data traffic, he said, thus private transmission facilities for such traffic cannot really be considered public network bypass facilities.

Jones also argued that the bypass threat has been "highly overestimated." The required investment "is too enormous to allow any large-scale migration for many years." He said Holiday Inns recently abandoned plans for both a microwave system to carry voice traffic around the Memphis local exchange and a satellite-based intercity network because the payback in each case was not sufficient to justify the investment.

J. C. Peasey Co., another respondent to the FCC inquiry, said there are "no readily available alternatives to the [public-switched telephone network]," so "wholesale bypass is not likely in the immediate future."

The company added that most bypass technologies — on which the telephone companies relied for much of their argument that bypass is a serious threat — are in "the earliest stages of development." Thus, it is premature to arrive at any conclusion regarding bypass, the firm said.

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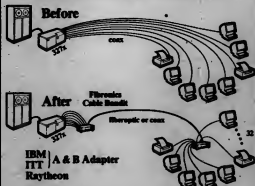
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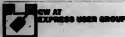


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NEWS

Strategic planning eases Southwestern Bell transition



By Susan Robinson
CN Staff

BOSTON — The formation two years ago of a strategic planning group has helped Southwestern Bell Telephone Co. survive a myriad of operational changes caused by the AT&T divestiture, according to Gayle Fields, staff manager in the Southwestern Bell marketing department in St. Louis.

Like other telephone companies caught in the wake of divestiture, Southwestern Bell discovered that it would have to provide many services formerly provided by AT&T. In addition, Southwestern Bell faced information processing modifications that would affect 90% of its operations, Fields told members of MDG, Inc.'s Express User Group Third Annual International Conference held here recently.

Southwestern Bell managers, who had always carried out tactical and operational steps based on AT&T's strategies, formed a committee in June 1982 to decide on strategic planning goals. Since that time, Fields has been involved in Southwestern Bell's strategic planning process, and she was responsible for the Express decision support system (DSS) that evolved when her company took that task back from AT&T.

Southwestern Bell officials had identified several major implications of the divestiture, Fields said. The company would probably lose revenue, and it would have to find new revenue streams, she said. Profitability and earnings per share were important now that Southwestern Bell was becoming a separate corporation set up on the New York Stock Exchange, and customers and customers would take advantage of byproducts

routes to avoid Southwestern Bell by going through MCI Communications Corp. or AT&T.

Arriving at a point where the 15-member strategic planning group could work on long-term planning was no easy task, Fields said. In its first few months, the group spent most of its time finding divestiture-related questions, which limited their scope to short-term planning, she added. After six months, the group decided to pass all such questions on to a divestiture implementation organization within the company, she said.

The group changed goals six times before settling on the final objectives.

Four basic questions finally evolved from Southwestern Bell's strategic planning group: What is our business? What will our business become if we pursue no new directions? What should we stop doing? What should we start doing?

For strategic planning, Southwestern Bell considers factors from its internal environment, such as product/service mix, contribution of its product lines, geographic concentration of customers, costs, pricing policies and its philosophy of management, Fields said. In addition, the company looks at the external environment of societal trends, competition, legalities and markets, she added. New technologies, such as fiber optics, satellites, microwaves and cable must be seen on a time line, Fields said, so the group can ascertain when these technologies come into use for Southwestern Bell and for its competitors.

Fields, together with the information services department at Southwestern Bell, identified the compa-

ny's sources and paths of information and the reporting needs of different departments and came up with a list of necessary items, she said.



Fields
SOUTHWESTERN BELL PHOTO

The company needed a system for gathering information, analyzing it and reporting on it across all departments. The new system would have to perform functions including modeling, simulation of the future and business case preparation, Fields said. A direct interface with top management meant it needed good graphics, she added. The most important function would be analyzing diverse data, Fields said, so the system needed a very flexible data base management tool.

Other systems too inflexible

Fields chose to use MDG's Express system after looking briefly at IBM's Application Systems, Mathematics Products Group, Inc.'s Ramis and other management systems, which, she said, were too inflexible. Southwestern Bell had been using Express on a Tynthers, Inc. IBM S035 computer running under the VM/CMS operating system since 1976, primarily for marketing applications. Southwestern Bell plans to continue the

time-sharing system, but Fields said she hopes the system will be brought in-house in 1985.

Information in the strategic planning system is organized by internal and external information, Fields said. Programmers loaded the internal data base already used by 80% of Southwestern Bell's employees, she said, and added synopses of the plethora of financial systems used by different departments. Central office capability information and whatever cost data was available were then input, she added. The external data put into the new system included competitive information, demographics, technological forecasts and costs, economic trends and industry average financial ratios, Fields said.

Southwestern Bell now has 24 months of rolling history on line with Express, Fields said. It uses Express's Financial Planning Package to examine "what-if" possibilities such as whether it is more beneficial for the firm to do its own installing or have an outsider do it, she added. The company can study the impact of new technology, Fields said, by projecting how a given course will affect their operations.

By loading external information and combining it with internal information, Southwestern Bell determines how much revenue it could produce in a given situation employing a conservative, moderate or liberal view, Fields said.

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NEWS

Micro project causes headaches for pharmaceutical firm

Manager cures profit-and-loss program glitches with spreadsheet system

By Susan Reinhold
OF ST.

BOSTON — William W. Howard had a heady problem.

Howard is manager of the Marketing Management Science Department at Warner-Lambert Co.'s Parke-Davis pharmaceutical division, located in Morris Plains, N.J. Ten months ago, the division's president gave all of his product managers IBM Personal Computers. Howard was given only two months to make the micros useful.

The division's finance department had been using micros for some time, and Parke-Davis' management decided that micros would make life easier for the product managers doing profit-and-loss statements for the division's 94 product groups.

Howard said his solution was to build each of 94 profit-and-loss statements, using Microsoft Corp.'s Multiplan, and upload to IBM's Express—distributed data system language via Express-nate, a micro-mainframe link, he told an audience at the recent Express User Group Annual International Conference here.

Already using products

Howard said he decided to build his system through Express because several Express products were already used in the division.

The information is now consolidated with a time-sharing Prime Computer, Inc. 750 minicomputer, running under Prime's Primos operating system, at Tynmshare, Inc. and provides reports to division heads and to the division president.

Howard's project was plagued by problems. He said he wrote the programs himself because the department's managers wanted the statements to conform to the corporate profit-and-loss statement, incorporating 55 line items with other factors, such as inflation. The program that he wrote used up 80% of the capacity of Multiplan 1.0 because some of the initial coding and formatting commands were unwieldy, he added.

Command caused errors

Another problem was that using the COPY command in the Multiplan spreadsheet sometimes caused Express-nate to issue error messages, Howard said. He and a programmer had to reenter information in cells where the COPY command had been used.

Howard finally uploaded the profit-and-loss statements to the mainframe in a five-hour, late-night session, he said, but the next morning he was bombarded with faulty reports. Everywhere that a COPY command had been used and an error message did not appear, two lines had dropped from the statement.

The statements were sent back to the product managers and corrected. Howard reconciled them in "three long days," he said, but the department's confidence was shaken. Every time any kind of inconsistency arose with the statements, the product managers automatically suspected the programs, Howard said.

In addition to learning Multiplan, the Parke-Davis managers had to learn how to run the program Howard had developed to run Express. He

taught them parts of the system on a piecemeal, ad-hoc basis.

"When you go to teach a product manager how to use a new computer system," he explained, "you've got one hour, and no more or less, because that's all the time that man has."

Howard said he based his Express system on the main facility. He wrote small blocks of code and tested each section as he developed it. The "what if" module under MDE's Planmod was too sophisticated for his purposes, so Howard developed the "plug and chug" method of "what if" analysis, which he

said meant the screen would come up and tell the user, "This is the current value of what you want to change; what do you want to put in there?"

The system was designed for quick reconciliation, Howard said. Parke-Davis product managers can now revise their profit-and-loss statements, do "what-if" analysis on all of their products, consolidate the results in about 30 seconds and check them immediately, he said.

Howard explained that he uses subroutines to grab data off everybody's data bases; he then is able to perform a total consolidation in ap-

proximately 30 minutes.

A five-year forecast was added to the Parke-Davis system, as well as some historical data for looking at long-term trends, Howard said. The department can compute both inflated and deflated dollars so managers can look at the growth of advertising and promotional expenditures, he added.

The main disappointment in this project, Howard indicated, was MDE's graphics facility. The graph can occupy only about 25% of the available page, and the starting axis numbers run together if anything but a zero is used for one of them.

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NEWS

Warped metal causing CDC, Memorex disk crashes?

By John Deament
CW Staff

MENNEAPOLIS—While initial reports attributed performance problems of certain disk drives from Control Data Corp. and Memorex Corp. to imperfections in a metal-on-side coating, one analyst said the problem may be that the aluminum plating itself may have been prone to warping.

Memorex announced Sept. 18 that shipments of its 3600 disk drive had been suspended, while CDC announced on Sept. 20 that production targets for its 35800 drive series had been cut back, but the product will still be shipped.

Both companies said they hoped to resolve the performance problems by

the end of this week.

Both drives use thin-film heads and aluminum disks with a metal-on-side coating. The media for both drives is manufactured by Disk Media, Inc. of Westlake Village, Calif. Disk Media is a joint venture of CDC and Burroughs Corp. Burroughs also owns Memorex.

Michael Hamilton of Piper, Jaffray & Hopwood, Inc., financial analysts in Minneapolis, said his sources have indicated that 15 of the first 50 CDC 35800 disk drives shipped this year experienced head crashes due to the warping problem. "We don't know whether the problem is arising from a design flaw or [if it] is a quality control problem," Hamilton said. Hamilton

said his sources, while outside the CDC operations area, have talked to users of the 35800 series drives.

Michael Gerny, vice-president of research for E. F. Hutton & Co., said both Burroughs and CDC had scaled up production of the disk media in the fourth quarter of 1983. CDC had produced 500 disk drive units through 1983 and was targeting 2,000 units for the current year, he said. "However, due to media quality difficulties, the reliability of the product is not up to the IBM 96% reliability standard."

Many financial analysts reduced projected CDC earnings as a result of the disk drive problems. Gerny reduced his projections of CDC earn-

ings from \$3.50 per share this year to \$2.50 per share. His opinion is that it will take CDC at least a year to resolve the disk problems. Hamilton reduced his projections from \$3.10 per share to \$2.10 per share. Hamilton said if the company meets its production target for this year "it will be an achievement." His firm is projecting that from 800 to 1,300 35800 series drive will be shipped this year.

Kent Nichols, a spokesman for CDC, said, "Only a few of our customers have encountered problems." Asked whether the problems involved errors in the recording of data or head crashes and the destruction of data, Nichols said he did not know.

CDC continuing to ship

Because management has "a high level of expectation" that the product will perform, Nichols said, CDC is continuing to ship, although on a limited basis. But production targets will be scaled back from 2,000 units in 1984 to 1,000 or 1,500 units, he said.

John Lowell, a spokesman for Burroughs, said that shipments were stopped when we were experiencing what we viewed to be temporary quality problems with the disk media. We were having problems meeting the yield we felt we needed to produce."

A user of the CDC 35800, Eugene Moe, of the Lutheran Brotherhood life insurance company here, said his shop has had no problems with the disk drives, but he is not sure he will buy any more of them. Moe, who is assistant vice-president of data processing at the firm, said the three 35800 drives were installed in April. Initial problems related to the drive were cleared up, and the machines have performed well since then, he said.

Asked if he was concerned about the reported drive problems, Moe said, "We certainly have a concern now. We'll be watching them very carefully." Moe said he plans to stick with the 35800 drives, "but whether we buy any more may be another question."

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Registration fees range from \$750 to \$1,000.

Dataquest is located at 1290 Ridder Park Drive, San Jose, Calif. 95131.

NEWS

DP seeing more minority managers, but hurdles remain

66

By Paul Kerasiowski
CW Staff

CLEVELAND — The number of minority professionals in managerial positions is increasing, but at some companies, major hurdles still face the aspiring black professional.

That was the consensus of members of the Black Data Processing Association (BDPA) interviewed by *Computerworld* at the BDPA's third annual meeting here last month.

"There are more minority professionals in middle and upper management positions today than there were a few years ago," claimed Norman R. Mays, BDPA president. "Opportunity is there, and race makes no difference."

Mays noted that, rather than race, a minority worker's educational background usually is the reason he is bypassed for a promotion. "When one moves from a technical to a managerial position, different skills are required," stated Mays, who is corporate data security manager at the MIS division of Cole National Corp. in Highland Heights, Ohio. "Because of their backgrounds, many minority workers lack the organizational and communication skills necessary for some managerial positions."

Minority-run companies tend to be more helpful and supportive of professionals trying to attain these skills than large corporations, according to Joan Michael, data base programmer at Polytex, a minority-run architecture and engineering firm here. "Polytex supports my involvement with the BDPA and supplies me with other benefits like tuition reimbursement," she said.

Unlike Polytex, some companies block the career growth of minority employees, according to Hugh B. Riggs, a senior programmer. "In some companies, there is an unwritten policy that a minority can advance only so far," he said. "When they reach a certain position, they are fired or given so little responsibility that they leave the company."

Riggs, who now works for Society National Bank here, related his experience with a former employer. "The company had a bad reputation for hiring and promoting minorities," the programmer said. "There were only a handful of minorities working there, and most of the minorities held very menial positions like maintenance."

Ironically, Riggs said he was hired because the company was attempting to change its image. "The company had brought in a black senior manager who wanted to increase the number of minorities in the company," Riggs related. "He brought in and recruited a number of minority workers, and

morale was improving. Then, there was a reorganization. He was let go and so were many of the people he recruited. That's when I decided to leave."

Word about a company's hiring procedures travels fast, according to Riggs. "I've been in the data processing field for 13 years," the programmer noted. "I know someone in almost every data processing department in Cleveland."

When a company does not promote minorities, word spreads.

Riggs stated that instances of discrimination are now the exception rather than the rule.

Sometimes, being a minority helps more than it hurts, according to one programmer.

"In a few cases, I have benefited from reverse discrimination," said Barbara Whitfield, senior programmer/analyst at TRW, Inc. located here. "TRW is trying to encourage its minority workers. A few times, I was promoted because I was black, even though there were other employees who were just as qualified."



OW AT BDPA

Opportunity is there.
Norman Mays

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I have benefited from
reverse discrimination.
Barbara Whitfield

77

Misconception, misinformation stunt potential DP careers for minorities

By Paul Kerasiowski

CW Staff

CLEVELAND — Misconceptions and misinformation prevent many minorities from seeking a career in the data processing field.

So claimed some attendees interviewed by *Computerworld* at the Black Data Processing Association's (BDPA) third annual meeting held here last month.

Jesse L. Binsley of the Joint Educational Facilities, Inc. in Washington, D.C., noted that school counselors can hinder minorities interested in a high-tech career.

"Some school counselors discourage minorities from entering the data processing field," Binsley claimed. "It is not the student's fault, but the fault of local administrators who allow their bias and ideologies to set policies."

"The number of minorities employed in the data processing field is low," Norman R. Mays, president of the BDPA, stated. "They are not attracted to the profession because, in most cases, they are not aware of its potential."

Mays, who is corporate data

security manager at Cole National Corp. in Highland Heights, Ohio, said that school systems are principally responsible for this lack of awareness.

Mays noted that minorities are often poorly prepared to enter the data processing field.

"Minorities often do not start preparing for a data processing career at a young enough age," Mays claimed. "When they do decide to enter the field, they often lack the skills needed for entry."

BDPA members stated that stereotypes also prevent many minority workers from considering the data processing field. "Many minorities think that only nerds can operate a computer," claimed Joan Michael, data base programmer at Polytex, a minority-run firm here. "They are afraid of the machine and believe they would be unable to control it."

Other stereotypes hinder entry, according to Gerard A. Anderson, an IBM employee in West Orange, N.J. "A lot of minorities still believe that one has to be good at math to excel in the computer field," Anderson

Some school counselors
discourage minorities
from entering DP.
Jesse L. Binsley

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See BDPA page 16

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NEWS

Study small business, BDPA told

By Paul Kamenetzky
Cliff Boff

CLEVELAND — A manager should run a department as though it were his own small business.

Clarence K. Fitch, an executive assistant to the mayor of Cleveland, presented that advice at the Black Data Processing Association's (BDPA) third annual meeting held here last month.

"Managers should read books about small business administration if they want to effectively run their departments," Fitch claimed. "The structure of corporations is changing. Today, most modern managers supervise only five to 10 people. This differs radically from traditional managers, who supervised a larger number of employees."

Stating that smaller units change a manager's role to one of an entrepreneur, Fitch said that "companies should try to develop in-house entrepreneurs, or 'entrepreneurs.' This tendency is spreading throughout the world. For example, Sweden has established a network of 'entrepreneurs,'" he said.

"Entrepreneurial" skills have to be encouraged on a corporate basis. "Departments should be encouraged to experiment on different projects and be able to find their own solutions," Fitch noted.

"Some companies fear that as they reduce centralized decision making, they duplicate efforts. This is true. In the short run that may be costly, but in the long run they are more pro-

"Companies should try to develop in-house entrepreneurs, or 'entrepreneurs.' This tendency is spreading throughout the world."

— Clarence Fitch, executive assistant to the mayor of Cleveland.

ductive."

Fitch maintained that successful companies like IBM and Hewlett-Packard Co. support this philosophy. "The company has to support the person who fails, whose design is not selected," Fitch said. "He must be placed in a win/win situation."

tion. This atmosphere encourages change.

Professionals should look for signs that a company may not support this atmosphere, Fitch warned. He listed some indications of this type of corporate attitude:

■ The company does not believe in its own chances for success.

■ There is no clear set of priorities.

■ Departments set different work standards; competitive heroes are disruptive figures who harm more than they help.

■ Long-term performance is not appreciated.

■ Corporate subcultures clash.

In addition to acting like "entrepreneurs," managers have to market goals as well as set them, Fitch said.

Other skills are required to be a successful manager, Fitch noted. "It can be harder to work with people than with technology. Data does not talk back. To be successful, a technician has to be able to work with people."

And a mentor who sees your potential is needed to help with the transition from technician to manager, Fitch concluded.

Directory Lists 16,000 D P Users

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BDPA from page 17

son noted. "While math skills may be helpful, analytic and managerial skills are more important."

Bemley stated that many minority school systems are improving. "Washington has a progressive school system that is helping minorities interested in the high-tech field," he noted. "There are many more programs today than there were a few years ago."

Cleveland schools.

Mays noted that the Cleveland public school system is using a number of IBM Personal Computers as part of a computer literacy program.

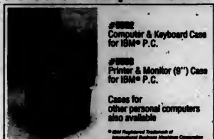
The Cleveland chapter of the BDPA, in conjunction with the National Urban League, wrote a computer literacy course.

"We try to take a lot of the mystery from the computer by telling people that it works like a typewriter," Michael noted. The National Urban League plans to use the course in its various chapters.

Despite these steps, problems still exist. "There are a number of programs in Washington," Bemley stated. "That progress is hampered because of a lack of funds and the problem of finding computer science teachers," he added.

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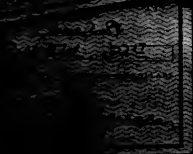
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NEWS



FBI examining severity of computer crime problem

WASHINGTON, D.C. — The Federal Bureau of Investigation has begun to track computer crimes to determine the seriousness of the problem, since there is no hard evidence to support allegations that computer crime has reached epidemic levels, according to FBI official Floyd I. Clarke.

Clarke, in a speech to the Information Industry Association's recent meeting here, said the FBI is tracking cases that meet its definition of computer crime — an act that violates "existing statutes where we have jurisdiction and where the computer and/or its peripheral equipment are the instruments or the victims of the crime."

He said a profile of the computer criminal showed a corporate employee, with a median age of 35, who is among the most highly skilled and trusted employees, but is frustrated by unchallenging work. The perpetrator usually works alone, unless additional access or skills are needed, and frequently is motivated to embezzle money by financial problems.

Clarke said the FBI has trained hundreds of law enforcement officers to investigate computer crimes. He also repeated the Department of Justice's position that the department's computer crime legislation is superior to two bills recently approved by the U.S. House of Representatives (CW, Sept. 24, Aug. 20).

Congressional report cites health hazards to VDT users

WASHINGTON, D.C. — A report prepared for the Congressional Office of Technology Assessment said improper lighting, poorly designed

workstations and repetitive work all contribute to the frequent health complaints of VDT users.

The report, "Potential Office Hazards and Controls," by Dr. Robert Arnold of the University of Wisconsin's Department of Preventive Medicine, was released recently by Rep. Mary Rose Oakar (D-Ohio). She criticized the Reagan administration for neglecting research on office health hazards.

The report noted that some VDT users believe the terminals emit harmful radiation that may cause cataracts and reproductive problems. "There is, however, no scientific evidence currently available which specifically links either of these problems with VDTs, although very few studies have actually addressed the issue," it added.

Despite government and industry

assurances that the VDTs do not emit harmful radiation, the report continued, "It is clearly evident that a high level of concern and fear exists among VDT operators, especially those who are pregnant."

Federal policy to be issued on information management

WASHINGTON, D.C. — The White House Office of Management and Budget (OMB) is preparing a major policy statement on federal information management that will guide all federal data processing and information collection offices, according to Douglas H. Ginsburg, administrator of OMB's office of information and regulatory affairs.

Speaking to the recent Information Industry Association meeting

here, Ginsburg said the new governmentwide policy, called an OMB circular, will not be issued for at least two more months because of the difficulties involved in drafting the document.

"It's like . . . trying to draft an information policy circular (that will be binding on all the Fortune 100 companies)," he said.

Ginsburg said that "OMB is trying to manage the government more like a business in making decisions about information policy." In principle, he said, OMB wants to ensure that the government's information resources are accurate, cost-effective, adequate for program needs, protected from unauthorized and unnecessary access and, whenever possible, operated by the private information industry.

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NEWS



BELGIUM

BRUSSELS — The European Economic Commission (EEC), which recently dropped its antitrust action against IBM, is further investigating IBM's source code policy.

The policy prevents independent software vendors from making the required changes in their product lines in time to compete against Big Blue.

Persistent complaints from manufacturers prompted the EEC to continue its examination of the source code policy.

BRUSSELS — A new group called the Association of Constructors in Informatics has been founded here. The association will provide a meeting ground for the management of large computer manufacturers here. One of the charters of the group will be to establish a code of conduct.

Chairman Daniel van de Plasche, director general of the Belgian Burroughs Corp. subsidiary, said members include representatives from Hewlett-Packard Co., Philips Information Systems, Inc., Olivetti Corp., Nixdorf Computer AG, Honeywell Bull-CL and ICL.

NETHERLANDS

AMSTERDAM — The Software Protection Foundation was recently founded here by a consortium of Dutch entertainment and home software distributors and developers.

The first action of the newly established group was an organized police raid on a local shop that was full of illegally copied software products.

AMSTERDAM — Dutch ITT-NISIM will demonstrate a method of laying fiber-optic cable based on "cable burying" technology, whereby the paper isolation of copper cables, already in the ground for years, will be

burned, according to sources here.

A combination of gases and air will be injected into the cable and set on fire. After being burned, the copper wires can be pulled out of the cable, while at the same time, the fiber wires are pulled into the cable. The technique is said to be well suited for wet soil such as that in the Netherlands.

AMSTERDAM — IBM is becoming selective with its

dealer network here, according to sources. Before dealers can sell IBM Personal Computer equipment they must fill out a lengthy questionnaire, sources said.

If they are found to have the right qualifications, they are selected for IBM training courses. Industry writers think IBM is trying to upgrade its Personal Computer distribution network.

At the same time, NCR Corp.'s dealer network has been gaining momentum

here. Some 15 system houses will be named NCR dealers by the end of 1984, sources reported.

UNITED KINGDOM

LONDON — IBM and the European Computer Leasing and Trading Association (ECLAT) are doing battle here. ECLAT is fighting to reinstate IBM's volume purchase agreements, which gave it discounts on large orders.

IBM recently restricted volume purchase agreements to single-named buyers, which eliminates smaller dealer companies.

ECLAT President Mike Joseph said the organization is reluctant to complain to the European Economic Commission, which would tie up the matter for years and alienate IBM.

Instead, ECLAT hopes that IBM will retract the volume purchase agreement policy, Joseph said.

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NEWS

National policy found influencing technological growth

NEW YORK — Korea does less batch processing than the U.S., according to the preliminary findings of a study on how national policies affect information processing.

Since batch processing is regarded as an older form of processing than on-line or transaction processing, Korea seems to be "more ad-

vanced in the application of information technology than the U.S.," said Edward M. Roche, a research associate with the Diebold Institute for Public Policy Studies, Inc. in New York.

Roche said Korea's information processing industry is analogous to its steel industry. As a recent arrival among developed countries,

Korea is able to adopt the latest and most efficient level of industry organization, bypassing earlier levels, he said. Korea's steel mills are viewed as more efficient than the U.S.' or Japan's.

In Brazil, batch processing is a dominant form of information processing, and it is not declining at the same rate as in Korea and the U.S.

In a country that is known for extreme protectionism of its computer industry, "something is hindering this change," Roche said.

Computer equipment is 300% to 400% more expensive in Brazil than in the U.S., while in Korea, it is only 20% more expensive. Brazil's tariff structure keeps foreign-made equipment out,

while Brazil's high rate of inflation and high costs of imported parts make it difficult for small companies to go into the computer business, Roche said.

These factors may force Brazilian companies "to hold on to an older form of information processing" rather than adopt more advanced systems, he added.

Even with Korea's more advanced systems, it shares security problems with Brazil. In both countries, fundamental problems with electricity supply create frequent system failures, and "backup is poor," Roche said.

John Diebold, founder of the group that includes the nonprofit Diebold Institute, said in New York recently that national policies frequently have unforeseen effects on information processing.

Studies on the outcome of these policies in Korea and Brazil are being done through detailed questionnaires and on-site interviews of computer users. The preliminary findings on Korea will be available late this year and on Brazil early in 1985. Six other countries, both European and Third World, are to be included in the study.

Results of the studies are available to the firm's clients from the Diebold Group, 478 Park Ave. S., New York, N.Y. 10018.

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Ex-HP engineer surrenders after alleged tape theft

PALO ALTO, Calif. — A former Hewlett-Packard Co. software systems engineer charged with burglary and illegally copying computer tapes is free on \$10,000 bail after turning himself in to Palo Alto police.

According to police reports, Wei Chen Yen allegedly stole three computer tapes from HP's corporate offices here on June 3. Police said he left two days later to join Axion, Inc., a small San Jose, Calif., software firm.

Police said Yen intended to run the tapes on Axion's hardware, but found that the tapes, which con-

tained sensitive Unix source code, were incompatible with Axion's system.

On June 21, Yen, in an attempt to reformat the tapes, used a phony name to get past security guards at HP's corporate headquarters. After logging on to an HP computer, Yen became aware that he had been detected by Greg Fowler, a tape custodian who was working on corporate business at home. Yen called Fowler, attempting to head him off, authorities said.

Fowler, however, recognizing Yen's voice, alerted the security guards, who confiscated the tapes and ejected Yen from the premises.

The incident prompted a three-month investigation, which led to Yen's surrender on Sept. 14.

According to Palo Alto police, the data would have been worth millions of dollars if it had been sold on the black market in violation of international and federal copyright and licensing laws.

The tapes were worth more than \$44,000 in licensing fees payable to AT&T and to the University of California at Berkeley, which developed the Unix version that was allegedly stolen.

Doug Southard, Santa Clara County (Calif.) deputy district attorney, said Yen's motives were unknown. "Yen may have been single-handedly trying to be a corporate hero at his new company," he said.

Law meet set for Oct. 10-11

NEW YORK — The University of Southern California Law Center and Law & Business, Inc. are sponsoring the fifth annual Computer Law Institute Oct. 10-11 at the Waldorf Astoria Hotel here.

The seminar will also be presented Nov. 29-30 at the Hyatt Regency Hotel in Chicago, the sponsors said.

Aimed at attorneys who advise on issues in the computer industry, the conference will address a range of issues, including proprietary rights protection and the spin-off, antitrust issues; structuring distribution arrangements; procurement; financing high-technology companies; and employee compensation arrangements, according to the sponsors.

The conference chairman is Ronald L. Johnston, a partner in the Los Angeles law firm of Blanc, Gilburn, Peters, Williams & Johnston whose primary practice is business litigation and computer law. Among the 22 scheduled speakers are Jon A. Baumgarten, a partner in the law firm of Paulsen, Gordon & Ryman, which specializes in domestic and international copyrighting in the computer, communications and publishing industries; and Stuart L. Bell, executive vice-president of Compu-U-Card International, Inc.

The registration fee for the conference is \$395. More information is available from Law & Business, 855 Valley Road, Clifton, N.J. 07012.

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The pc software to use if you don't have IDMS/R.



GOLDENGATE™ is the logical choice for IDMS/R users (see facing page). But what about in non-IDMS/R environments? How does Cullinet's integrated pc software stack up against the more than 50 competitive packages on the market today?

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NEWS

Half-million dollar bail for 'key player' in chip sting

SUNNYVALE, Calif. — Two Silicon Valley computer chip brokers are free on bail following their arrests last month on charges of attempting to buy stolen chips.

Bhatri Chawla, owner of Microcomponents International, a brokerage firm based here, and J. Andrew Masterbone, a chip broker who operated California Electronics

Components Co. out of his Sunnyvale apartment, were arrested by local police following a three-month undercover "sting" operation set up by local police, the Santa Clara County district attorney's office and integrated circuit manufacturer Signetics Corp.

Chawla is free on \$505,000 bail, posted within

hours of his arrest, according to Santa Clara County Deputy District Attorney Doug Southard. Southard, a high-technology crime specialist, said Chawla's bail was set high "because Chawla's an important player in the case," and because he poses "a substantial risk of fleeing prosecution."

Masterbone, "a smaller

player," according to Southard, is free on \$5,000 bail.

According to police reports, an anonymous source told law enforcement officials that Masterbone had bragged at a Silicon Valley health club of selling stolen chips at a low price. Undercover Signetics security personnel contacted Masterbone in June, and he subsequently

led them to Chawla. Chawla purchased four batches of stolen chips from agents in August — the last shipment worth an estimated \$639,000 on the retail market, said Ray Yaden, a Signetics security manager involved in the case.

Agents of the U.S. Customs Service and the Federal Bureau of Investigation were present at both arrests because a portion of the shipments may have been sold overseas, said John Meester, a high-tech undercover investigator with the Sunnyvale Police Department.

Meester said the case is still being actively investigated by federal and local authorities, including Customs Service officials, the Santa Clara district attorney's office and the California Tax Board.

Chawla, a citizen of India, who police said had bragged of earning \$40 million a year by reselling stolen computer parts in the U.S. and overseas, still operates a brokerage business from India, according to Southard.

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Sperry users to convene

ATLANTIC CITY — The Data Center Management Conference for users of Sperry Corp. 1100 computer systems will be held here Oct. 31 to Nov. 1.

The conference is designed specifically for MIS executives using Sperry 1100s. Some topics to be covered are communications network management, charging for computer resources, capacity planning, user satisfaction and fourth-generation languages, according to conference sponsor Datacomics Systems Corp. of Fairfax, Va. The keynote speaker will be Earl C. Joseph, president of a Washington, D.C., Sciences, Inc. and a designer of several Sperry systems.

The conference costs \$796 per person when paid in advance or \$860 at the show. More information is available from Datacomics Systems, 9640 Main St., Fairfax, Va. 22031.

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NEWS

Red tape, competition hurt federal DP recruitment



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By Nick Bette,
CW Washington Bureau

WASHINGTON, D.C. — Attracting and keeping talented data processing personnel is one of the federal government's toughest challenges, because of the scarcity of skilled DP professionals, competition from high-paying private companies and inflexible government

personnel policies, speakers told attendees of a seminar at the recent Federal Computer Conference here.

"I have not yet seen a well-trained and contented DP staff [in the federal government]," said Dr. Carl R. Palmer, an acting associate director of the General Accounting Office's (GAO) Information Management and Technology Division, who spoke at the seminar "Attracting and Keeping Good People."

Another speaker, Lois Zella, president of the con-

sulting firm of Lois Zella & Associates, Inc., noted, "I've got news for you — you don't own the problem. The commercial world has the same problem of attracting and keeping good DP people."

Zella suggested that DP managers first discover what makes current employees dissatisfied, then launch a campaign to resolve conflicts and institute well-monitored training programs.

Notes that cause trouble

William S. Franklin, an associate director of the Information Management and Technology Division, outlined the federal personnel rules that make the problem especially troublesome for the government.

It job descriptions for computer and telecommunications specialists date back to the mid-1960s and need to be revised to reflect current technology.

DP employees are typically paid about \$5,000 to \$6,000 a year less in the government than in the private

late interested.

Circumvent the rules

In addition, he noted, DP managers can circumvent many federal personnel rules if they can prove there is a shortage of qualified applicants with skills critical to the agency's goals.

Wallace O. Keene, director of the U.S. Department of Health and Human Services' Office of Computer and Information Systems, stressed that federal managers must understand what motivates computer specialists, who

tend to have different needs from other employees.

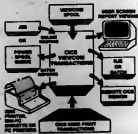
Keene said studies have shown that DP professionals have a very low level for social interaction, have a high need for personal growth and are more loyal to their employers than is commonly thought.

"[The professionals] have needs and biases, but there is every indication that if we meet their needs and understand their biases, then we will be able to retain them within our work force," he said.

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Federal managers must understand what motivates computer specialists.

sector. In addition, federal recruiters generally cannot pay applicants' travel expenses for interviews or direct moving expenses.

The White House Office of Management and Budget Circular A-76 requires agencies to contract with private firms when possible, thus reducing the job security benefits of federal employment.

Military retirees cannot be rehired for civilian government jobs for six months after retirement, enabling private firms to lure these retirees away.

However, Franklin said there are ways federal managers can improve their DP personnel situation. He suggested aggressive recruiting at industry meetings, ensuring that each agency maintain modern computer equipment and a favorable public image and providing job variety to keep computer specialists



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NEWS

AI expert systems making the grade in commercial mart

By Bryan Wilkins

Chattanooga, Tenn.

WASHINGTON, D.C. — The use of artificial intelligence (AI) and expert systems that can perform analyses based on human reasoning and inference is gaining rapid acceptance in the commercial market, according to a symposium of experts at the Federal Computer Conference held here last week.

So-called "knowledge engineering" is the process of achieving expert problem solving performance from a computer system that has incorporated human knowledge and experience into the system in the form of data bases.

According to a panel representing 10 companies at the symposium, the market for expert system applications is growing rapidly. In 1983, the total revenues spent on commercial AI applications ranged from \$75 million to \$125 million, estimated Dr. Frank Bittanog, president and chief operating officer of Lisp Machine, Inc. in Los Angeles.

More AI ready in five years

Dr. Thomas Kehler, executive vice-president of Intellipoint in Menlo Park, Calif., predicted that expert software systems running on personal computers will be readily available within the next five years.

However, Gale C. Morgan, corporate marketing manager for AI at Digital Equipment Corp., warned of the danger of overreliance on AI and expert systems performance to the layman.

Dr. Kehler said that the commercial demand from U.S. companies for expert systems applications has multiplied to the point where small firms that custom design applications are facing enormous backlogs of orders.

Large vendors in AI field

Several larger U.S. computer manufacturers such as DEC and Data General Corp. have already entered the field with products that support AI programming languages such as DEC's Lisp.

DEC showed conference attendees programmers tools such as the VAX Lisp and OPS5. DG showed its propri-

etary Common Lisp Programming Environment, which is used on its 32-bit Eclipse MV family of superminis.

While larger computer manufacturers are moving into the AI field, the majority of AI products are being introduced by a variety of smaller, capitalized firms.



A massive amount of federal support is currently in progress through the Defense Advanced Research Projects Agency (Darpa) and its Strategic Computing Initiative. There, basic research in AI is being

done in areas of vision, speech and natural language. Robert Conn, director of

the Darpa initiative, outlined the efforts of the agency to develop an autonomous remote-controlled vehicle, a comprehensive battle management system and an aircraft cockpit mechanism to aid pilot control.

Conn said that the major obstacles facing efforts to develop expert and AI-based systems is in machine pro-

cessing performance.

"It is quite clear that the crucial aspect of all these efforts is to map these knowledge data bases on parallel machines," he said.

He predicted that there will be concrete results within the next five years and that the private sector will be incorporating the work into commercial products.



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NEWS

CALENDAR

WEEK OF SEPT. 30

OCTOBER 4-7, DALLAS — IBM PC World Exposition. Contact: Mitch Hall Associates, P.O. Box 860, Westwood, Mass. 02090.

OCTOBER 5, SAN DIEGO — User Group for Ryngaert's System 1180 Computers. Contact: USE, Inc., Box 461, Hidesburg, Md. 20710.

WEEK OF OCTOBER 7

OCTOBER 8-10, ORLANDO, FLA. — 1984 Southeastern Telecommunications Association Meeting. Contact: Southeastern Telecommunications Association, P.O. Box 901, Richmond, Va. 23207.

OCTOBER 8-10, BOSTON — Fundamentals of Data Communications. Contact: American Management Association, P.O. Box 310, Saratoga Lake, N.Y. 12063. Also being held Oct. 23-24 in Atlanta.

OCTOBER 8-10, SAN FRANCISCO — The Fifth-Generation Challenge. Contact: The Fifth-Generation Challenge, P.O. Box 22575, San Jose, Calif. 95153.

OCTOBER 8-10, PITTSBURGH — Technology and the World around Us. Contact: International Technology Institute, 7126 Saltburg Road, Pittsburgh, Pa. 15236.

OCTOBER 8-10, TORONTO — Data Communications I: An Introduction to Concepts and Systems. Contact: Datapro Research Corp., 1806 Underwood Blvd., Delran, N.J. 08078.

OCTOBER 9-10, CHICAGO — Purch Modification Laboratory. Contact: The Purch Interest Group, P.O. Box 1106, San Carlos, Calif. 94707.

OCTOBER 8-11, NEW YORK — IEEE International Conference on Computer Design: VLSI in Computers. Contact: IEEE Computer Society, P.O. Box 630, Silver Spring, Md. 20901.

OCTOBER 8-11, DALLAS — Integrated Information Technology Conference and Exposition. Contact: JH Nieman, National Trade Publications, Inc., Suite 400, 2111 Eisenhower Ave., Alexandria, Va. 22314.

OCTOBER 9-12, INDIANAPOLIS — Internal Logic, System Design and Performance. Contact: Computer Systems Research, Inc., Aves Park Dr., 40 Darling Drive, Aves, Conn. 06001.

OCTOBER 9-11, TULSA, OKLA. — Southwest Computer Conference. Contact: Southwest Computer Conference, Box 960, Norman, Okla. 73076.

OCTOBER 9-11, PHILADELPHIA — 1984 Plant and Facilities Computer Systems and Maintenance Equipment Show. Contact: Flagg Management, Inc., P.O. Box 4440, Grand Central Station, New York, N.Y. 10163.

OCTOBER 9-12, LOS ANGELES — Programming in C — A Hands-On Workshop. Contact: Ruth Derick, Integrated Computer Systems, P.O. Box 45405, 6205 Arizona Place, Los Angeles, Calif. 90045.

OCTOBER 9-12, LAS VEGAS — The American Production and Inventory Control Society (Apics)

37th Annual International Conference and Technical Exhibit. Contact: Apics, Conference Department, 500 W. Ansondale Road, Falls Church, Va. 22046.

OCTOBER 10-11, CHICAGO — Integrating Multivendor Voice & Data Networks. Contact: Marilyn Chastain, The DMW Group, Inc., 2020 Hogback Road, Ann Arbor, Mich. 48104.

OCTOBER 10-12, HOUSTON — Data Analysis & Logical Design. Contact: Elise Rabelais, Learmonth & Burdett Management Systems, Inc., No. 405, 2800 N. Loop W., Houston, Texas 77002.

OCTOBER 10-12, LOS ANGELES — Microcomputer Data Base Management Systems. Contact: Software Institute of America, 5 Windsor St., Andover, Mass. 01810.

OCTOBER 10-12, SAN DIEGO —

Localnet '84. Contact: Cynthia Parsons, Online Conferences, Inc., Suite 1180, 2 Penn Plaza, New York, N.Y. 10119.

OCTOBER 11-12, BOSTON — Disease II. Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07740. Also being held Oct. 18-19 in Houston and Oct. 23-25 in Seattle.

OCTOBER 11-12, WASHINGTON, D.C. — Understanding Telecommunications Technologies for Non-Engineers. Contact: Telestrategies, Suite 102, 6842 Elm St., McLean, Va. 22101.

OCTOBER 11-13, NEW YORK — 1984 Computer Dealers & Lessors Association's Annual Meeting. Contact: Computer Dealers & Lessors Association, 1212 Potomac St. N.W., Washington, D.C. 20007.

WEEK OF OCT. 14

OCTOBER 14-16, CHICAGO — National Retail Payment Systems Conference. Contact: Inter-Financial Association, 21 Tunal Vista Blvd., Corte Madera, Calif. 94935.

OCTOBER 15-16, N. FALMOUTH, MASS. — '84 Seybold Executive Forum. Contact: Cheryl Paton McManamy, Seybold Publications, Inc., Suite 612, 148 State St., Boston, Mass. 02108.

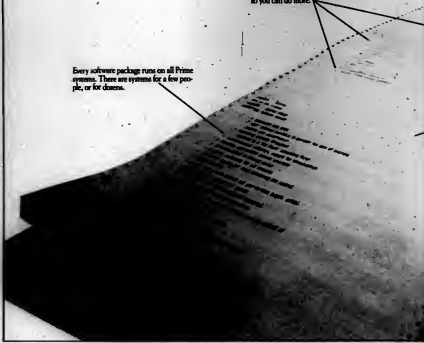
OCTOBER 15-16, ORLANDO, FLA. — Expert Systems Seminar. Contact: TTS Seminars, P.O. Box 3608, Department EEN, 5430 Kashiwa St., Torrance, Calif. 90510.

OCTOBER 15-19, NEW YORK — CIOB Command-Level Programming. Contact: Syed, Inc., 35 W. 36th St., New York, N.Y. 10001.

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NEWS



**TURNAROUND
TIME**
Larry Long

Q Is it just me, or is competence having an increasingly greater influence on the way we communicate?

Yesterday, I exited the port at the back end of my "mainhouse" and walked through the gateway to the microshed where I retrieved several productivity tools for maintenance.

My wife saw me displayed in the window and transmitted concern about the density of the grass. I interpreted her transmission as a command, booted my machine and initiated the project according to a standardized methodology that is based on a top-down looping algorithm.

At termination, I compiled and dumped the grass at the front end of the mainhouse. From there, a common variable updated the grass over-flow and then downloaded it to an off-site location for permanent storage.

Competence may have impacted the communications systems of some people, but it is transparent to me and does not affect me a bit!

Q You advised a novice programmer that after a "medium of two years... programming offers opportunities for... career challenge." Furthermore, "armed with a valuable programming background you can transfer to... any of half a dozen other career fields."

This sounds similar to what my manager told me when I expressed an interest in pursuing work other than the co-

reer-and-end applications programming that I have been doing for a long time.

I think what I'm really being told is, "Look, we need a body here, and with our salary and benefits, you're never here, but here's some false encouragement anyway."

How can I tell what to do, both programming and enter the dynamic world of computers?

I have 11 years of experience, knowledge of five languages and a master's degree in computer science. And yet, I'd be willing to accept a lateral move (or less).

I disagree with your characterization of the applications programming career path. Applications programming has been a career stepping-stone for thousands of vice-presidents, partners, hardware/software entrepreneurs and others holding

high-level positions.

A select few with no interest in management will make a career of applications programming. But for the overwhelming majority, applications programming is a starting point that provides a marvelous technical and experiential base.

Your situation is surprisingly common. A high percentage of companies unknowingly lure their workers into complacency and technological obsolescence.

A profile of such a company would typically be one that promotes entirely from within, is five to seven years behind in implementation of state-of-the-art technology, has virtually eliminated turnover and offers an aggressive compensation package.

The people that work in such an environment usually have little or no external input or feedback. As a result, many sincerely believe that they are working at the leading edge of the technology.

You have the credentials to change jobs, but don't expect companies to match or exceed your inflated salary. Even if you take a cut in pay, a position that offers challenge and opportunity will be worth more over the long term.

Q I am in my late thirties, have a bachelor's degree in math, love to program my radio and want to get into the computer field as a programmer. I don't need starting at the bottom.

If one is over 30, should one avoid programming? Is there a gold of entry-level programming?

I learned assembler and Cobol from a former high school band director. Over the years, I've met many capable MIS professionals with music backgrounds. Several went out of their way to expound on their failings in mathematics.

No discipline, including mathematics, has a corner on learning through logical analysis.

Realistically, there are simply too many people getting some kind of a degree in computer science or information systems for everyone to obtain employment as an entry-level programmer.

However, I continue to see a steady improvement in the market for entry-level programmers. These graduates who are serious about a computer-related career are getting jobs.

But at least half pursue the degree because "it is the thing to do." These people never fully develop a programmer/analyst mind set, and after a halfhearted, unsuccessful search for employment, they opt for a career in another field.

The opportunities are there for educationally qualified people, but you must pursue them aggressively.

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IN DEPTH



An interview
with the authors
of 'Techno-Bandits'

Last week, *In Depth* presented an excerpt from *Techno-Bandits*, a recently published book from Houghton Mifflin that reveals the persistent, widespread and often brazen attempts of the Soviets to acquire American technology. This week: an interview with authors Linda Melvern and Nick Anning by George Harrer, senior editor of features.

How the USSR steals U.S. high technology

How much computer technology has the Soviet Union acquired illegally from the U.S.? Can you give a sense of the dimension of the problem?

Melvorn: No, I don't think anybody can. We asked one of our contacts in Boston this lunchtime. He said he felt like an ant in a forest. You cannot quantify.

Anning: The cases we know of account for tens of millions of dollars. You compare the kind of figure that you would get if you asked the same question about drugs or arms shipments. We're talking about the same kind of percent of difference. That tens of millions could account for 5% or 25%, perhaps. There's no way to put a figure on it.

Is acquiring technology in this way a policy for the Soviet Union?

Anning: We're convinced that it is. It was a policy decision that was taken in 1966 and 1967 and operable all through the system, not just through the intelligence services, but elsewhere in the commerce and trading sections.

It seems to be a policy that recognizes they can't develop the technology themselves. Isn't it a policy that assures they will always be behind the West? They're going after whatever the West is producing now

instead of researching and developing it themselves. They would always have to be one step behind.

Melvorn: But we don't know what they have in other areas. They might be far ahead in other areas, just not in this. Someone in Congress said, "The Russians can do anything they want, but they can't do everything." They may be far ahead in areas that we or, indeed, the [Central Intelligence Agency] or [National Security Agency] have no idea about. But in microelectronics, they were behind.

Anning: That was definitely one of the main areas that convinced them. I think it was a practical consideration, from what we looked at, that they would avoid extending the lag time and they would also not commit massive resources to duplicating research and development that they knew was already going on in the West. So in some ways, emulating the IBM 360 or 370 made a lot of sense.

They could have done it two ways. They could either have just copied exactly, item by item, or they could have emulated more broadly the concepts. Then once they'd done that, they knew they could carry on picking software or peripherals and the rest of it from the West as they needed it, in the case of computers particularly. In other areas, it's not so clear, because there is less documentation and fewer stories, such as in ceramics, for

IN DEPTH/INTERVIEW ON TECHNO-BANDITS

instance. As far as we looked at computers and microelectronics, there was a very deliberate decision made to establish a program that would ground a whole industry, based pretty much on what they could get from the West.

One would think that the Soviet Union was not in a rush to computerize its society in a broad way. Are they acquiring this technology primarily for military use?

Melvern: Primarily, but not solely. There are people who believe solely, such as in the Pentagon.

Did you talk to any Soviet officials?

Amberg: We didn't really try hard to talk to officials, but we certainly have good contacts who are in the

The Soviets are putting an enormous amount of resources and money into their acquisition program. They wouldn't allow themselves to be left short of a manual or a critical piece of programming software or compiler just for the sake of a few thousand dollars.

Soviet Union, who provided us with enough of an insight for us to be fairly certain of the main facts and main assessments we were making. That, combined with information from other sources, allowed us to evaluate.

Since the book has come out, have you had people contact you and say, "You haven't heard this

story. You should know about..."

Amberg: The book has only been out a short time, and we've only been in the States for a little while. So it's still early yet. But we're hoping there will be some comeback from people with criticisms or additions to make.

You talk in your book of the Soviets' "shopping list"...

Melvern: Did we ever see it?

That's a good question, not the one I was going to ask. Did you ever see it?

Melvern: The answer is no, and we do not in fact know if anybody in the American administration has seen one either.

What's probably on that list right now? What do the Soviets need now and might they be looking for?

Melvern: The Gray 1.

Amberg: There are two ways of answering that. You can look at specific things like the Gray 1; I'm sure they are interested in the supercomputers — both the hardware, the design know-how and also the operating systems. The Americans, when they come to calculate the military critical need, put it in six-point type; they've got 700 pages of it. I would expect the Soviet shopping list in its fullest form to be something equivalent to that — the military critical technology list that the Pentagon draws up.

What happens is that it gets broken down and handed out all across the bloc countries and within the KGB and GRU [the Intelligence Division of the General Staff]. People take on different parts of what they want. If you're asking what is actually targeted at the moment, it's very hard to say specifically what they're looking for. Technology transfer covers so much — nuclear technology, space technology, medical technology, construction technology. It's wide open.

To acquire a piece of hardware without getting the software, the correct operating system, documentation, training, support — that piece of hardware can be worth almost nothing. It's worth almost nothing to use, but of course, it can be valuable if the Soviets are acquiring in order to copy and integrate into their own systems. They must have a lot of hardware that they have no way to use.

Amberg: I think it would be a mistake to take that view. To write off the kind of people who evaluate what comes through, whether from legal or illegal sources, as people who don't really know what they are dealing with or how to apply it would be a grave mistake. There are some very heavy-duty people who are involved in looking and evaluating.

I take your point that there are certain key things you need once you have this hardware. I think you'd find that they know very well what they need and where their gaps are. They're putting an enormous amount of resources and money into their acquisition program. They wouldn't allow themselves to be left short of a manual or a critical piece of programming software or compiler just for the sake of a few thousand dollars. If they need it, they'll get it, and they know where to get it. They know exactly what they want down to the item numbers.

Melvern: There are programmers in Moscow working on [Digital Equipment Corp.] VAXs in hospitals.

Amberg: There's a certain amount of interchange, anyway. You see, there are computers behind the Iron

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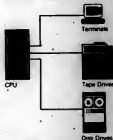
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IN DEPTH/INTERVIEW ON TECHNO-BANDITS

Certain that are serviced by standard personnel from Western companies on good, legal contracts. Quite often, the word may get through to those people that a certain system is there and maybe has bugs in it.

Some of these guys are very sharp. The Hungarians, for instance, are very good at adapting standardized software to their own specifications. They bought ICL machines from the UK, and then there was a block on the next generation of staff going through. They just adapted software until they could virtually do some of the things that were being done on the new ICL machines with the old software for the older machines. They now come back to Britain, and they have a little marketing bureau for software, which sells the stuff back to ICL users in Britain. They've gone far, far in that area, and I have no reason to believe that they have not done so in other respects as well.

would have to be a political decision that brings in the ideology of whether you can, in fact, trade with potential adversaries.

You have to ask yourself also, "Why is it possible to sell to the Chinese?" Up until last year, it wasn't possible to trade certain computers or technologies to the Chinese, because they were considered a potential adversary. It seems the political decision was made to go ahead and open up with the Chinese; suddenly it became all right. What's the position of trading really up-to-the-minute systems with Israel, for example? You don't hear about technology transfer there, although you know that Israel is quite prepared to sell to all sorts of people, such as South Africa.

You are talking political decisions when you talk about technology

transfer. That hasn't been thrown open to wide debate yet. What we're getting as a background to the book is people in the Pentagon making the decision on the matter and not being challenged that hard.

Melvran: To restrict open publication of scientific data... You may have read some of the reports from the National Academy of Sciences. They said you cannot do it, because it's detrimental to the scientific community. It has been a suggestion that foreign nationals cannot come over and work here. Werner Von Braun was of enormous value to your country.

A story in our Sept. 17 issue described a venture in which Chinese programmers would be working for U.S. companies at a reduced

hourly rate. The Shanghai Software Consortium is an American company that has the first Commerce export license for software services in China.

Can you imagine this arrangement with Soviet programmers... Cuban programmers working in American businesses?

Anning: Not at the moment, anyway.

Why Chinese?

Anning: Because there's been a political decision to open up to the Chinese. Go back to your previous question. In a sense, if you make that political decision to take a hard line, it seems as though people in the scientific and business communities believe you are cutting off part of a much bigger cyclical process that

You are talking political decisions when you talk about technology transfer.

In this, then, an Eastern bloc strategy more than strictly a Soviet Union policy?

Anning: The Soviet Union breathes on the Warsaw Pact and the Warsaw Pact pants back. There might be a certain resentment, perhaps, in the satellite countries. There may have been a certain amount of resentment of the unified computer program that was pushed on them from Moscow. But you don't really argue with Moscow; you don't step out of line too far. All the bloc countries have their own niche to go for. We have examples of that. There's a story in the book about Poland taking a particular niche, and Bulgaria does certain work and Hungary.

The Soviets can steal technological secrets outright; they can hear for specific items through techno-bandits; they can read the technical journals to learn about basic research. These three areas give the Soviets a lot of room to maneuver. Can an open society, as the U.S. is, ever expect to hide its high technology?

Melvran: It's certainly a question that should be debated, and it isn't.

At the end of your book, you present both sides. You say, "Here are the issues; the West should talk them over." As I read both sides, I try to judge which side you are coming down on. In order to frame the argument, you need to put both sides, but what...

Anning: The short answer to your question would be that if a political decision was taken to restrict transfer of technology totally, a brave attempt could be made to do it, but I think it would have an equal and opposite reaction from other areas, like the scientific community and business community, and possibly in the political community, as much as I understand the American system. It

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goes on where there is interchange of all sorts of information. The reason the Chinese are involved is because a political decision was made earlier this year to trade with China.

The other side of the coin is that there might be a political advantage to the U.S. to trade very large volumes of information to the Soviet Union because that, in fact, in the end would open up the kind of system they have there. Just by the impetus of having information technology available at a high rate, not necessarily for a military use, but just for civilian trade and manufacturing — that would open up the kind of decision-making process which, at the moment, is very top-heavy and pyramid-like in a centrally directed economy. You might get some people asking keen questions in the civilian environment.

If you stop all trade and all transfer of technology, you get certain consequences in other parts of your own system. If, on the other hand, you go for a very liberalized kind of trade, you might actually achieve what you're trying to achieve, which seems to me to be the liberalization of the Eastern bloc, by a different route.

That could be wishful thinking, too. Information may have created a more distributed decision-making in the West, but we don't know how it would play out in that kind of society.

Answer: That's true. But it could be wishful thinking that we could stop the transfer of technology anyway.

The Commerce Department seems not yet to know what it should do in the matter. In January it proposed strict controls, including the disclosure of customer lists and the certification that the customer will not resell the equipment. These proposals have been dropped very recently, apparently because the Reagan administration is not willing to go counter to what U.S. businesses want.

Melvern: However, if they drop them, they are now saying to industry, "OK, so self-regulate." They just fined DEC \$1.5 million.

Was the DEC fine meant to be an example?

Answer: It certainly could be interpreted that way, couldn't it. And also as part of a power play by the Commerce Department to say, "Look, we can regulate as well as anyone else."

Explains Operation Exodus.

Melvern: It was an attempt to stop the leakage of American technology to the Soviet bloc, which, as you've read, started in a very strange way and has really given the Customs Service a reason for living. They've certainly gone at it with gusto.

Was it meant more to bring attention to the problem or be a serious answer?

Melvern: A serious answer — they take it very seriously, oh yes.

What about our Western allies? Are they taking this problem as seriously as the U.S.?

Melvern: No, they weren't at all. But I think that some of them under great pressure come 'round to the American viewpoint.

Answer: What Exodus can do here with legal backing it can't do in West Germany and England. That's why you have problems on the diplomatic level.

The legal question is interesting because, as you point out, Commerce Department regulations are not part of reciprocal pacts with Western European companies.

Melvern: We were surprised to hear in Washington last week that an Interpol warrant had been issued for Richard Muller. That is a big advance.

Answer: We had heard rumors be-

fore about this, but Interpol denied it.

My impression is that Muller was free and living publicly.

Melvern: No one seems to know. He seems to have disappeared completely.

Answer: Now 10 people have been indicted for that operation in Hamburg and Lubeck. We knew certainly that three or four people were behind bars waiting trial. Muller would certainly have gone behind as well.

Melvern: Customs has said to us that they are very pleased with European cooperation, but whether it has gone as far as they would like, I doubt.

How would you describe the

"techno-bandit"? Who are these people?

Melvern: They're greedy businessmen. People have asked me if it's ideological. It's like the arms trade — money.

Do you have any sense how many are operating in the U.S.?

Melvern: We've heard that it's expanding. One thing to remember is that the denial order list that the Commerce Department issues is seen as sort of a Yellow Pages. If anybody wants to buy illegal technology, they have only to look at the denial order list to find out who's doing what.

Answer: These are people out to make a fast buck. They see a hole in the market. They see themselves as a gray interface between two opposing



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global blocs. In Europe, certainly, there were a few diehards — in the dozens or perhaps in the hundreds. Now we're told that there are more and more, so much so that they're driving the prices down. Once someone could make a killing and get two or three times the market value or more. Now we've heard people are even getting trade discounts, dealer discounts.

Wouldn't it be easier for the Soviets to get the technology they want from Japan, West Germany, France, England?

Melvern: The Japanese don't even have an espionage act.

Auning: There are more established trading links in Europe, because there is a kind of buffer zone of neutral countries, such as Switzer-

land, with a strong trading history, and Austria with a strong link to the Eastern bloc, Finland and Sweden, which is a neutral country that will happily trade with anyone it wants to. One of Cocon's [the Coordinating Committee for Multilateral Export Controls] problems is to get what they agree on, after much wear and tear, accepted by the neutral countries without appearing to put too much pressure on them. That has caused the U.S. problems.

You must have seen the way the Austrians reacted when someone in the Commerce Department, unnamed, said that they had trouble with the Russians but they hated the Austrians. The Austrians were up in arms over this. They said they don't condone illegal transfers any more than anyone else. But it is still a good area for people who know the rules

and know how to bend the rules, which is what techno-bandits really are. Austria and Switzerland are good places to be. We've heard that Muller is in Switzerland; it would be very difficult to extradite.

In focusing on techno-bandits, you're not so much going into Soviet spying.

Melvern: How can you draw the line? It's a very fine line between techno-banditry and espionage.

When I say espionage, I mean spying by the Soviets themselves.

Auning: It would be bad field craft for a trained KGB man in place in an embassy to get involved in the trading practice of someone who was there legitimately. I don't believe the KGB would expose their place men or

certainly their undercover people to conduct a gray trade. It's not worth it to them.

Particularly if they don't need to, if they can get it through a techno-bandit.

Melvern: One angle that interested us was the lack of security in Silicon Valley. You've got people who arrive at three in the morning because they're just had an idea. People who, if they've forgotten their pain cards, are going to want to get in anyway.

Auning: Also the quick turnover in personnel. How can you police people's minds? That know-how goes with the person when he moves.

Melvern: They all spy on each other anyway. It's that loose.

*It's a very fine line
between techno-
banditry and
espionage.*

The U.S. computer industry believes about itself that it's important to have hundreds of entrepreneurs, to have a certain number of mature companies, to have IBM as the flagship, to have many well-trained computer scientists coming out of the universities. How does the Soviet Union, without much of this structure, use the hardware it gets? U.S. companies have great difficulties linking up different systems. How do the Soviets integrate the hardware?

Auning: The evaluation is very sophisticated and starts at a high level within the military industrial committee. The Academy of Sciences has people in institutes throughout the country — big, prestigious, well-stocked, well-funded institutes [such as] the Institute of Computer Science in Minsk. Their evaluation process has grown on the back of their centralized style of government. It's done differently here because the business community takes enormous leads. Its tie to the Department of Defense is different. From the situation in the Soviet Union.

In terms of applying what they get, I think you would find that those kinds of jobs are given to the people they know are best at a particular area. If those people can come up with applications on an order basis from the military, again that would be coordinated through the military industrial committee in the end. Whether that means in the end that you have one person working in a laboratory trying to interface an IBM and an Apple, or whether it's a whole institute working on interfacing problems or networking problems, we don't know for sure.

They have some very good computer scientists in the Soviet Union. It's only a matter of time before they come up with a particular answer to any particular problem.

Why was this book written by British journalists?

Melvern: I'd love to know. I can't understand why the subject of techno-banditry hasn't been taken on by someone in this country.

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VIEWPOINT

Data center managers: Lay down your pagers



THE DATA
CENTER
John P. Murray

In your data center managed by remote control? Do certain data center management people carry pagers so that they can be reached at any hour of the day or night to provide assistance in the event of data center problems?

I am aware of the volatile nature of the typical data center function. I am also aware of the requirement to keep the data center work flow moving and to provide, insofar as is practical, uninterrupted availability of the data center processing function.

I also realize that it is difficult to provide explicit communication and instruction to data center people on the second and third shifts. I know that things do occur on the first shift which will impact the other shifts and that, for a variety of reasons, this information is not always passed on to the people on those shifts.

I am also aware of the need to do the best possible job in coordinating the activities of all the data center shifts in order to manage as effectively as possible the total data center function.

Indication of failure

While the use of pagers may be viewed as an aid to the improvement of the management of the data center, it seems to me to be an indication of at least a partial failure on the part of the data center management. If your data center depends upon the use of such a remote management method, you may want to consider some of the implications of such an arrangement.

There are always occasions where those who must make critical management decisions in the

data center on the second or third shift will have to seek advice from more senior people who are not on site. When these occasions do arise (they should be few, if the data center is properly managed), a telephone call should suffice to obtain the required answers.

The use of pagers by data center management in order to maintain constant contact with the data center is a reflection of insufficient training for second- and third-shift operations supervisors. Their use also reflects a failure to install and effective

The use of pagers by data center management in order to maintain constant contact with the data center is a reflection of insufficient training for second- and third-shift operations supervisors.

tively use a sound method of communication between the shifts.

I believe the use of pagers represents a symptom of a more serious data center problem, namely a failure to demonstrate appropriate confidence in those charged with the responsibility for second- and third-shift supervision. If people are being paid to assume the responsibility for the supervision of a data center shift, they deserve the training and guidance to do the job correctly. Once they have been trained and guided, they should be allowed to demonstrate their ability to do the job on their own.

Of course some mistakes will be made. After all, part of the process of growth is to learn from our mistakes as well as from our successes. Keeping too tight a rein on everyone stifles opportunities for growth and hampers the development of a strong data center function.

It is clear that one reason for the use of pagers by members of the data center management has to

do with fear of relinquishing some of the power and control they exercise as managers. Of course there are risks in allowing these as the other shifts to make some decisions on their own. However, a failure to build an environment where people can assume responsibility and where they can learn by their mistakes does more harm to everyone in the long run.

Some data center managers will counter, I suspect, by stating that the data center function is so critical to the day-to-day operation of the business that mistakes must be kept to a minimum. While that is a valid position, a number of safeguards can be built into the process to help hold the error rate to a reasonable limit. Again, the benefits to be gained from staff development will, over time, prove to be of greater overall benefit to the organization than the harm caused by some errors — providing sound controls are in place, and people are paying attention.

Freedom to learn from mistakes

Until an approach is begun that will allow people more freedom to make their own decisions and to learn from their mistakes, considerable hand-holding must be carried on by data center senior managers.

As long as that circumstance continues, those managers will be prevented from giving appropriate attention to the important issues of planning and overall direction for the data center. As a consequence, the growth of the data center function and the development of improved data center service levels will be retarded.

While assuming additional risk in order to allow others to develop on their own is not an easy task (after all we all know we can do it better and faster ourselves), doing so is a necessary element in the development of a strong data center staff and must be encouraged.

There can be real benefits for the data center management group as well. Dealing with the pressure of being available all the time is not particularly pleasant. Moving from a remote data center management style can be a definite plus for all concerned.

Murray is director of management information services for Raytheon Corp., Madison, Wis., and author of Management Information Systems as a Corporate Resource, published by Dow Jones-Irwin.

Public rallies to halt errors in computer crime system



HUMAN
CONNECTION
Jack Stone

On September 13, an article titled "Suit charges many mistakes in identity by crime computers," appeared in *The New York Times*. The story described the on-going and rather terrifying situation whereby innocent people have been — and continue to be — tossed into the slammer because of data errors in the FBI's National Crime Information Center.

The issue is hardly a new one; it has been discussed in the trade press for years. But the article reported on a recent development which, in the long run, may make a difference. In principle, few people object to the idea of centralized master files and the national-level sharing of crime information through terminal access at police locations in the various governmental jurisdictions. What many people are upset about, though, is the well-publicized lack of controls over the data base: the promulgation of erroneous and/or outdated information which is then accepted as gospel by local officers and used as the basis for arrest.

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

Now some diehard computer-oriented theoreticians say that the advantages of the current system far outweigh its disadvantages, and that it is justified because only relatively few citizens have been mistakenly handcuffed and handed into jail. From a purely analytical and statistical perspective, the statement is certainly true. However, from a social and human perspective — which, in my opinion, is the proper one to take in this matter — the number of cases of mistaken identity is terribly and frighteningly large and, according to the *Times*, is growing every day. The severity of the menace cannot be overemphasized: Would you enjoy?

■ Being routed out of bed without notice, in the middle of the night, by some very intimidating police officers?

■ Being threatened with a "resisting arrest" citation if you fought to avoid the "cuffs"?

■ Being thrown into a paddy wagon?

■ Being booked for alleged criminal acts that you had nothing to do with?

■ And the final blaster, having to hire a lawyer and pay him to clarify your identity in court?

ACLU files suit

What is significant now, as the *Times* reporter pointed out, is that at long last the citizens have risen up in anger and filed legal action to correct the deficiencies in the DP crime system. In this particular case, the American Civil Liberties Union (ACLU) filed suit against the New Orleans Police Department seeking improvements in its computer

system on the basis of numerous documented cases of gross malfeasance involving the unlawful jailing of innocent citizens.

There is little question about the generic source of the problems, namely errors in data entry and updating. In the police system, according to an ACLU lawyer, there are the "small, understaffed sort of political patronage places... [where]... the employees work irregular hours... There's no real line of authority that you have in the large law enforcement agencies and not the level of competence." A New Orleans arrest pointed out one typical problem, that of arrest warrants floating around the system which have been legally withdrawn, but not deleted from the computer system.

There are a great many questions about the lack of controls exercised by the police departments who employ the data. Arresting officers, all charged up over the prospect of bringing another vile criminal to justice, often take the data output for granted without checking with the source to validate its accuracy and/or timeliness. "After all," the neophytes say, "it's computerized. Therefore it must be accurate."

It's not that the public isn't grateful to or intends to handoff our police departments as they pursue their tasks. The issue is that the number of wrongfully jailed people is growing, and the police don't seem to care. The only way remaining to correct these miscarriages of justice is to provide legal recourse to those whose rights have been violated, namely, federal legislation which, by the way, is on next year's congressional docket.

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SOFTWARE & SERVICES

IBM conversion aid debuts; Mapics enhanced

WHITE PLAINS, N.Y. — In conjunction with its recent announcement of two new models of the System/36 computer, IBM unveiled a conversion aid for System/36 users looking to migrate to the System/38 and a new version of its Mapics manufacturing software for the System/38.

The System/36-to-System/38 Conversion Aid runs on both machines and helps to convert source code and data files from the System/36 to the System/38. The programs are menu-oriented, allowing the user to make selections that generate jobs to be executed in batch mode, IBM said.

Among the conversions it performs are RPG-II to RPG-III; Operation Control Language to Control Language (CL); Display Format Specifications to Data Description Specifications; Sort Specifications to Reformat Utility Specifications; and Menus to Data Description Specifications. CL, A number of other conversion utilities are in-

cluded, IBM said. The product is available for a one-time charge of \$600.

Mapics II for the System/36 is said to include major efficiency enhancements over System/36 Mapics. It also includes new applications in the areas of financial analysis, purchasing and forecasting, a spokesman said. Ease-of-use and ease-of-installation enhancements are also part of the new release.

The financial analysis application provides automatic journal entries, budget preparation, financial ratios, fixed-asset accounting and a financial statement report writer. The purchasing application provides data entry, manipulation and reporting capabilities for quotations, requisitions, purchase orders and vendor data. The forecasting application offers features for creating, monitoring and comparing performance against forecasts.

Mapics II also includes enhanced and

expanded capabilities in the following areas: production control and costing; payroll; accounts payable; accounts receivable; inventory management; product data management; general ledger; sales analysis, order entry and invoicing; data collection system support; material requirements planning; capacity requirements planning; and cross-application system support.

System/36 Mapics II also provides Save/Restore for all Mapics II master files and, optionally, data entry files on tape or disk. It offers support to migrate files from IBM System/34 or System/36 Mapics to Mapics II. Up to six concurrent data entry users may work on the system, and concurrency is provided for on-line file maintenance and data entry.

On-line optional Help text is provided for all applications, the spokesman said.

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■ IBM has unveiled a new series of enhancements to its VSE operating system/46

■ Digital Equipment Corp. has ported its Ultrix-32 operating system to the Microvax I micro/86

■ Tesseract Corp. announced a payroll system that is integrated with its human resource software/86

■ A package from Infotym gives IBM Personal Computer XT/370 users access to IBM Vsam files/86

■ Incompatible word processors can now exchange data with a hardware/software package from United Systems Group, Inc./81

INSIDE
Systems
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Productivity Aids/84

DEC announces DOD-approved Ada compiler

WASHINGTON, D.C. — Digital Equipment Corp. has announced a fully validated Ada compiler for its VAX-11 systems.

The Ada compiler has been tested and validated by the U.S. Department of Defense, DEC said. It joins a small number of other approved Ada compilers.

The DEC Ada compiler is completely integrated into the DEC VMS Common Language Environment, DEC said. It has full symbolic debugging capabilities, support for DEC Record Management Services, the ability to call routines in other languages and support to allow other languages to call routines written in Ada, the company added.

The Ada compiler also provides full access to VMS system services and utilities as well as access to other VMS tools, such as Code Management System (CMS), that can be used in conjunction with Ada.

DEC said the new product will now un-

See DEC page 55

MSA introduces purchasing, reporting, retrieval systems for IBM mainframes

ATLANTA — Management Science America, Inc. (MSA) has expanded its IBM mainframe offerings with the announcement of a real-time purchasing system and a fourth-generation information retrieval and reporting system that will be incorporated across the company's line of applications by the end of this year.

According to a spokesman, the Information Expert (IE) reporting and retrieval system is the first product to be announced in a planned series of fourth-generation application development tools. The information reporting and retrieval component of IE is designed to simplify the process of creating standard and ad hoc reports for both technical and end users. Future IE components reportedly will include a real-time query capability and a screen painting facility that

will allow end users to develop screens for data entry and inquiry.

The spokesman said IE reporting and retrieval will be made available to existing

MSA applications users at no cost by year's end through maintenance agreements and will also be available as a stand-alone product. Pricing for the stand-alone system has yet to be announced.

Shipment dates for the remaining two IE components were not announced. Through a common data dictionary that stores the characteristics of data maintained in MSA applications, the product allows users to consolidate information from several systems into a single report. If information from multiple applications is required, the IE system retrieves the required data. Users do not have to know

See MSA page 55

The IE system is the first to be announced in a planned series of fourth-generation application development tools.

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SOFTWARE & SERVICES

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Dorlen Products



IBM adds SSX/VSE aid; offers DS/VSE front end

WHITE PLAINS, N.Y. — IBM has unveiled a version of its Small System Executive/VSE (SSX/VSE) operating system that provides support of new hardware, intelligent workstations and additional IBM-licensed programs. The company also introduced Decision Support/VSE 1.1 (DS/VSE 1.1), an end-user-oriented front end to its VSE operating system.

SSX/VSE 1.4 is a pregenerated, preconfigured operating system for IBM 4321, 4331, 4341 and 4361 systems. It can be installed in two hours or less, IBM said. The new version in-

cludes integrated component testing and service aids and task-oriented documentation.

Support is now included for the IBM 4361 Model 3 processor, IBM 3870 Models A03 and B02 storage devices, the Work Station Adapter on the 4361 and intelligent workstations including the IBM 3270 Personal Computer and IBM Personal Computers with IBM 3278/3279 emulation. IBM's CICS/DS/VSE 1.5.0 is included in the new release.

Generally, the same pregenerated VSE components contained in SSX/VSE 1.3 continue to be used in the new release. The one-time charge for a basic license is \$20,000. A monthly license charge is \$1,200.

DS/VSE 1.1 consists of three existing license programs — SQL/DS, Query Management Facility/VSE (QM/VSE) and Graphical Data Display Manager (GDDM) — and one new one: DS/VSE Productivity Facility.

The software is said to simplify planning, distribution and installation of IBM products offering support for decision making and to ease operation of included products by providing panels and help screens for function selection. It uses intelligent workstation support of IBM's VS/SP 2.1 and SSX/VSE 1.4 and bridges between SQL/DS data bases and the GDDM Interactive Chart Utility.

Earlier program selection

DS/VSE Productivity Facility provides a set of menu panels that make it easier for the user to select included programs and to move from program to program, IBM said. Other enhancements make it easier for the user to combine the functions of included programs. Menus can be used to extract data from an SQL/DS data base and move it to the operating system's intelligent workstation transfer file or make it available to GDDM.

The four components of DS/VSE are priced as follows: Decision Support Productivity Facility, \$171/mo or \$3,075 for a one-time charge; SQL/DS, \$454/mo; QM/VSE, \$660/mo; and an additional licensing charge of \$4,000; and GDDM, \$149/mo with an additional licensing charge of \$715.

The entire package costs \$1,566 plus the additional licensing charges. IBM's National Accounts Division is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

The T-1000 Protocol Converter Makes a Micro-to-Mainframe Link

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Simply put, the advanced technology Tandy 2000 is the best MS-DOS personal computer around. Now with the T-1000 Protocol Converter, the Tandy 2000 can cost-effectively emulate an IBM 3270-2. That brings the power of a 3270 environment, or vital records, reports and data from host computers, right to your desktop.

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The T-1000 features terminal and auxiliary ports, screen buffers and a coax port that allows direct connection to IBM type A coax. The terminal port supports the Tandy 2000 and most Radio Shack computers and terminals, along with a modem

for remote dial-in access to a 3274/3278 cluster controller. The T-1000 works with the cluster controller in BSC, SNA/SDLC or channel attached operations. The auxiliary port, with a user-selectable baud rate ranging from 300 to 9600, lets you go from terminal to coast mode without having to switch cables. And you can select between 3278-2 emulation or asynchronous communications mode with just a single keystroke.

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SOFTWARE & SERVICES

Workbench seen key to application development

Shift from traditional method said to allow innovation, free up manager's time

By John Gellman
CW Staff

CHICAGO — If users can have a central source of productivity software called the information center, shouldn't software developers have one too? The Wilmington, Mass.-based Systems Division of Avco Corp. thinks they should. With that in mind, the division recently created an in-house development center charged with constructing a development workbench that will aid its applications development professionals.

Charles Hewitt, director of applications and technology for the Systems Division, outlined the group's move from a traditional applications development approach to a development center during a session at the recent Software/Expo conference here.

Hewitt heads a 60-member staff, of which 35 people are involved in developing software both for in-house applications and for the defense products Avco designs and manufactures.

Traditional approach

In the past, the Systems Division relied on what Hewitt labeled the traditional approach to software development. That approach pivoted on the skills of a technical manager who defined the procedures and standards to be followed during the development cycle. The manager also organized a set of software tools to help programmers during such phases as coding and testing and trained staff members in the use of that tool kit.

Hewitt said the traditional approach was fairly efficient and manageable, but it presented several major problems.

"The manager had to be a technical whiz in a variety of areas. That was hard to do with applications becoming so complex," Hewitt said. "In addition, major innovations were avoided because they were too disruptive and resources were not available to test and evaluate them. Any large change would only increase the backlog. Thus, any changes were adopted piecemeal and too slowly to keep pace with the changing environment. We did not lead, we reacted."

Faced with those problems, Avco Systems Division decided to try another route, Hewitt said. The organization recently funded and began staffing a development center — an information center of sorts for applications professionals that will take over many of the roles of the techni-

cal manager.

The center will institute application development procedures and standards and will create a broader tool kit — known as a development workbench — to be used across software projects. The development center approach will allow project managers to concentrate on managing systems and personnel resources.

In Avco's plan, the development center has been implemented as a separate organization apart from the applications development group. The center will be staffed by what Hewitt called a few, high-powered staff members skilled in development

techniques and design methodologies and armed with valuable communication skills. "The development center," he said, "is designed to be a support organization for applications development professionals [which] understands what they do and can help them do it better."

Currently, the center's primary focus is creating the development workbench, which Avco sees as more than just a collection of software packages for supporting programmers and systems analysts. Hewitt envisions the workbench as encompassing hardware and software tools, accepted methodologies and

standards and services to support the development process, such as subsecond programming environment response time, desktop access to tools and a dedicated program test environment. The workbench will express management's project life cycle goals, analysis and design methods and documentation standards.

"The scope of the workbench program will include the entire development life cycle from design through development to maintenance," Hewitt said. In addition, the creation of the workbench will be a never-ending process for the development center, he said.

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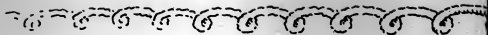
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SOFTWARE & SERVICES

Infotym airs Vsam tool for XT/370

CUPERTINO, Calif. — Infotym has announced a software package that provides IBM Personal Computer XT/370 users with IBM Vsam capabilities.

According to a spokesman for Infotym, a division of McDonnell Douglas Automation Co.'s Information Systems Group, Tym/Vsam gives users the ability to utilize the data storage and retrieval facilities provided by Vsam routines through IBM's VM/PC operating system on the Personal Computer XT/370. With the product, a programmer working on an XT/370 workstation can develop and execute programs and employ the system as an applications delivery system.

The spokesman said Tym/Vsam does not require modification to VM/PC, allowing a program to be tested at the workstation where it was developed. The package supports Vsam processing for programs written in PL/I, Cobol and assembly languages. It is implemented as an IBM CMS access method and uses the CMS file system.

With Tym/Vsam, programs reportedly can be developed on the XT/370, transferred to the mainframe and run with the mainframe version of the product. The system also supports key-sequenced and entry-sequenced data sets, as well as multiple alternate indexes. Any portion of a record can be used as a key for direct retrieval or for positioning in a data set before it is sequentially accessed. Program execution on the CMS virtual system is said to eliminate the definition and maintenance requirements for IBM DOS/VSE Vsam support.

The XT/370 version is \$395; the mainframe version is \$5,000.

Infotym is located at 30275 Valley Green Drive, Cupertino, Calif. 95014.

Tesseract line adds payroll

SAN FRANCISCO — Tesseract Corp. has announced a payroll system for its line of human resource software. The payroll package is said to be fully integrated with the company's personnel, benefits and claims systems and operates as a on-line, real-time update inquiry system.

The software runs on all IBM and compatible mainframe environments under IBM's OS and DOS operating systems with IBM's IMS, Collinet Software, Inc.'s IDMS or Software AG of North America, Inc.'s Adabas data base management systems, the vendor said. The payroll system is said to offer access to all system data bases, including reference tables containing payroll tax regulations.

Major features of the payroll system include on-line check calculation and retroactive processing.

The cost ranges from \$110,000 to \$150,000, depending on options.

Tesseract is located at 101 Howard St., San Francisco, Calif. 94105.

DEC offers Ultrix-32 for Microvax I

MAYNARD, Mass. — Digital Equipment Corp. has announced the Ultrix-32m operating system, a version that brings the Ultrix-32 operating system for VAX-11 32-bit and PDP-11 16-bit CPUs to the Microvax I microcomputer system.

Ultrix-32m is also compatible with University of California at Berkeley 4.2 and System V versions of AT&T's Unix, as well as DEC's Ultrix-11 Version 2.0. Ultrix-32m includes a set of intersystem facilities for communication with and networking of a variety of multiple systems, including the Department of Defense's TCP/IP protocol for Xerox Corp. Ethernet support, DEC said.

Ultrix-32m is a subset of Berkeley 4.2 Unix and is supplied with two command-language interfaces, Unix Version 7 Bourne Shell and Berkeley C Shell. The C programming language and associated program development tools are also provided.

Version 2.0 of Ultrix-11, announced concurrently with Ultrix-32m, provides hardware support for the Micro

PDP-11/73 system as well as other PDP-11 CPUs, the company said.

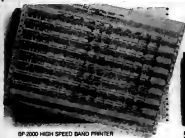
Version 1.0 of DEC/Shell

DEC also announced Version 1.0 of DEC/Shell, a command-line interpreter said to provide users with an interface similar to the interface on a Unix Version 7 operating system, but running under the Vax operating system, the company said.

The minimum configuration for Ultrix-32m is a Microvax I system with 1M byte of memory, a 10M-byte 5¼-in. Winchester disk drive, an 800K-byte 5¼-in. diskette drive and a console terminal.

The price of Ultrix-32m is \$750 for a single-user license. The price of Ultrix-11 Version 2.0 is \$800 for a 16-user license on microcomputers. The price of DEC/Shell is \$4,750 for a 16-user single-user license. All the products will be available this fall, the company said.

DEC is located at 146 Main St., Maynard, Mass. 01754.



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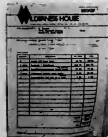
8070 MATRIX PRINTER



DP 35 DAISYWHEEL PRINTER



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8050 MATRIX PRINTER



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SOFTWARE & SERVICES

Cosmos offers WP bridge

NEW YORK — United Systems Group, Inc. has announced a software package that is said to provide compatibility between word processors using an IBM Series/1 under the EDX/EDN operating system.

According to the vendor, Cosmos provides a neutral language that allows incompatible word processors to exchange data. The receiving machine reportedly recognizes documents as though they were originated on that machine, permitting immediate editing capabilities.

The system allows a supervisory command post to monitor the flow of information. It also permits one user to access an information service on one machine and distribute that in-

formation to other word processors on the system, the vendor said. Cosmos security measures include passwords, audit trails and silent alarms.

Cosmos comes as a hardware and software package. Base price for the system hardware, which includes the IBM Series 1 with 10M bytes of storage, terminal and printer and four asynchronous and bi-synchronous ports, is \$15,000. The basic software module costs \$18,500; a \$9,000 package for multivendor support is also available. Prices increase depending on configuration. Leasing plans are also available.

United Systems Group is located at 145 W. 28th St., New York, N.Y. 10001.

SYSTEMS SOFTWARE

SYNOBORT, INC.

Synsort CMS Release 5.3

Synsort, Inc. has announced a version of its sort-and-merge program for IBM's VM/CMS.

Synsort CMS Release 5.3 now includes a Multiple Output Facility, which permits up to nine output files to be produced from one input file and then directed to disk, tape, printer or punch, according to the vendor. Other features reportedly include additional INREC/OUTREC capabilities and support for SKIPEEC/STOFAFT parameters.

Release 5.3 of Synsort CMS is licensed at \$7,500 for three years.

Synsort, 580 Sylvan Ave., Englewood Cliffs, N.J. 07632.

ADVANCED COMPUTER COMMUNICATIONS
Access Network File Management System

Advanced Computer Communications (ACC) has introduced a network software package written in C that provides file management services for Digital Equipment Corp.'s VAX-11 computers under DEC's VMS and the AT&T Unix operating system.

The Access Network File Management System (AFMS) offers file transfer, access and maintenance services through interactive and runtime interfaces. Plans, blocks and individual records can be manipulated across a network, regardless of the different operating systems' file management structures, the vendor said. A key design feature is Access FMS' network file header, which ensures that no information is lost as the file is moved, the vendor said.

Source copies of the Access FMS are available for \$25,000.

Advanced Computer Communications, 730 Santa Barbara St., Santa Barbara, Calif. 93101.

NETWORK RESEARCH CORP.

Fusion Version 3.0

Streamlined device drivers and support for the Digital Equipment Corp. VMS operating system and TCP/IP protocols are among the enhancements in Network Research Corp.'s Fusion Version 3.0 network software.

According to the vendor, Fusion permits the connection of incompatible processors, including the Motorola, Inc. 68000 processor, the Intel Corp. 8086, the IBM Personal Computer and Personal Computer XT and DEC's Rainbow, VAX and PDP-11. Operating systems include AT&T Unix and Microsoft Corp. MS-DOS as well as VMS.

Fusion 3.0 now supports both the Ercolan, Inc. and Communication Machinery Corp. intelligent boards, the vendor said. In addition, the product's code has been redesigned to improve its modular structure and permit easier porting to new machines.

According to the vendor, 16K bytes of the driver's 18K bytes previously located within Fusion's kernel can now be relocated to intelligent boards, opening up data space. The 2K bytes remaining in the host provide the interface to the intelligent board.

The price for Fusion on MS-DOS-based micros is \$750; on Motorola 68000 multibus microprocessors running under Unix, \$1,250; on the VAX-11 under Unix, \$3,500. For the DEC VMS operating system, the Fusion software is priced at \$6,000.

Network Research, 1101 Colorado Blvd. Santa Monica, Calif. 90401.

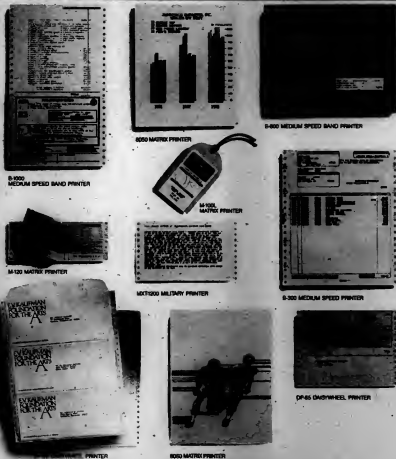
TSI INTERNATIONAL

Key/Master Version 3.2

TSI International has announced Version 3.2 of its Key/Master on-line data entry system. Key/Master Version 3.2 runs on the IBM 370, 30 series, 4300 or compatible mainframe under IBM's OS and DOS operating systems. It can run with IBM's CICS or can stand alone, the vendor said.

This version allows selection of IBM's VSAM or Idam and includes an on-line Help facility. Data can be

Continued on page 84



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SOFTWARE & SERVICES

Continued from page 51

loaded from off-line files while the on-line system is executing, the vendor said. Other enhancements include additional operator command capabilities, user file lookup and extraction and multiple command execution and documentation.

The Key/Master Version 3.2 price ranges from \$15,500 to \$29,750, depending upon customer equipment.

TSI International, 187 Danbury Road, Wilton, Conn. 06897.

DUQUESNE SYSTEMS, INC. Catalog Performance Optimizer enhancement

Duquesne Systems, Inc. has announced that its Catalog Performance Optimizer (CPO) now keeps a list of all alias and related entries in the user catalog instead of only control volumes.

According to the vendor, the CPO enhancement will improve throughput and response time in IBM OS/VS systems. Keeping the most active alias entries in main storage, it points the search to the user catalog and eliminates the need for master catalog searches, the vendor said.

The CPO enhancement is priced at \$4,000 for one CPU; multiple discounts are available.

Duquesne Systems, Two Allegheny Center, Pittsburgh, Pa. 15212.

GAUL COMMUNICATIONS Font1 Version 1.3

Gaul Communications has announced a version of its Font1 program for processing character font and logo files that are compatible with Xerox Corp. electronic printing systems. Font1 Version 1.3 is designed for IBM mainframes supporting an IBM MVS, TSO or CMS environment.

The Font1 program converts font and logo files designed for the Xerox 9700 laser printer to a format compatible with the Xerox 2700 laser printer used in distributed environments. Font1 can also generate character-width tables for word processors accessing proportional fonts.

The Font1 price is \$960.
Gaul Communications, 4287 Edward Ave., Downers Grove, Ill. 60515.

KONTRON ELECTRONICS, INC. Universal Development Interface

Kontron Electronics, Inc. has introduced an interface software package that allows users of Kontron development stations to use Intel Corp. software for applications programming. The Kontron Universal Development Interface (UDI), developed by Omnicore System, Inc., creates an Intel i80286 operating system environment on Kontron KIS-906 and KIS-900 development systems.

The software allows execution of Intel high-level language compilers such as PL/M for Intel's 8000 series microprocessors and Fortran for Intel's 8080, Intel assemblers ASM 86/88, ASM 48 and ASM 51, Intel linker and loader and Intel editors Credit and Aedit. Object code programs can be downloaded into the target application system through an optional Kontron Slave Emulator. The Kontron UDI costs \$1,000.

Kontron also introduced its Kontron PC Universal Development Interface that works with Kontron's Personal Instrumentation Interface

card to create an Intel i80286 or i80386 development environment on the IBM Personal Computer.

The Intel 8006 microprocessor-based software supported includes Intel's ASM 86/88, PL/M 86/88, Fortran 86/88, Pascal 86/88 and C-86 compilers and Intel utilities. Price of the Kontron PC UDI is \$600.

Kontron Electronics, 630 Price Ave., Redwood City, Calif. 94063.

PRODUCTIVITY AIDS

SYSTEC SOFTWARE PRODUCTS, INC. Eagle 88

Systec Software Products, Inc. has announced a programmer's pro-

ductivity tool said to be designed for data centers converting to the IBM OS and for shops that need to support complex regression and user-acceptance testing.

Eagle 88 features a natural language command set, the vendor said. Its utility features are said to include functions such as record selection, scans, data modification, record prints and dump.

Other features of Eagle 88 include a compare facility, automatic file matching, data name cross-referencing, partition data sets scans, scan replaces and member merging, splitting and renaming.

Eagle 88, priced at \$9,000 per site, also is intended for users of IBM's MVS and MVS/XA operating systems, the vendor said.

Systec Software Products, 235 Bristol Way, Bolingbrook, Ill. 60439.

DBMS, INC. Dictionary Migrator

DBMS, Inc. has introduced a software tool said to be designed to ease the transfer of complete systems or portions of systems from one integrated data dictionary (IDD) to another in Cullinet Software, Inc.'s IDMS operating environment.

Dictionary Migrator is said to enhance moving applications from test to production dictionaries. It reportedly permits user-defined migration paths that conform to any type of dictionary organization. The user specifies the sending and receiving dictionaries and any of 14 selection criteria. Dictionary Migrator extracts the necessary source and load modules, produces detailed reports and generates the Cullinet syntax necessary for migration, the vendor said.

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SOFTWARE & SERVICES

The tool runs under IBM's OS/VS1, MVS or DOS/VSE with IMS & 7 and IDO 3.0.
DBMS, 1801 MUI St., Naperville, IL 60560.

CARLETON CORP. CQS-Infotec

Carleton Corp. has introduced an information retrieval and reporting language program said to be designed to increase programming efficiency on IBM mainframe and plug-compatible systems.

CQS-Infotec has an English command language and built-in dictionary. All technical information on the data is contained in the data dictionary.

Based on the dictionary's contents, the program handles all data formatting and validation automati-

cally, the vendor said.

All data base and non-data-base files are accessed using the same set of simple commands. Data base interfaces provide access to IBM's IMS and DL/I, Cincom Systems, Inc.'s Total, Culimier Software, Inc.'s IDMS and Software AG of North America, Inc.'s Adabas files, the vendor said.

CQS-Infotec offers one-pass processing to increase machine efficiency for production and ad hoc reporting, the vendor said. All output is produced during a single pass of the input files, which reportedly eliminates the need to run separate jobs to produce separate reports on intermediate work files.

Prices range from \$27,500 to \$39,000, depending on the operating system used.

Carleton, 245 First St., Cambridge, Mass. 02142.

MSA from page 45

where needed data is stored within the applications, MSA said.

The menu-driven system allows an on-line terminal user to decide whether to use a previously defined report format or to create a new format. Through system prompts, the user can tell the IE what data to include in the report, and the system can then review the report specifications for errors. The system also generates the coding for the report and presents it for review at the terminal, the vendor said.

The spokesman said more sophisticated users can bypass the end-user prompting facilities and utilize MSA's IE language to create reports in a nonprocedural manner. Using English-like commands, the user can outline the data to be included in the

report and the information processing requirements without using detailed, procedural instructions. Even in this mode, the IE system will completely format the user report.

In addition to the first product in the IE line, MSA also announced a real-time system that is designed to aid businesses in managing the inventory requesting, purchasing, receiving and inspecting functions. This MSA Purchasing system is integrated with the company's Manufacturing, Order Processing and Accounts Payable systems, allowing shared information to be used among the applications.

The integration of Purchasing and Manufacturing reportedly ensures that the Material Resource Planning (MRP) module of Manufacturing is advised of the most current quantities of inventory orders, as well as projected availability dates. MRP sends inventory requirements to the Purchasing system in the form of a requisition, while Purchasing automatically updates the inventory balances available to meet production requirements.

The spokesman said MSA Purchasing, developed using IE technology, is also a decision support system capable of supporting vendor and quotation analysis and requisition review and consolidation buying. As with other MSA applications, the IE reporting and retrieval system will be incorporated. Other standard features include on-line documentation through MSA's Help prompter, a save-and-show template that reduces key input by storing material to be repeated later and a terminal recovery facility.

Both the IE reporting and retrieval and MSA Purchasing system run on IBM mainframes. MSA Purchasing is currently available and has a base price of \$100,000.

MSA is located at 3445 Peachtree Road, N.E., Atlanta, Ga. 30326.

DEC from page 45

dergo testing at selected sites before being released to the public. It will be available in the spring of 1985.

Pricing is as follows: The compiler for the VAX-11/730, 11/750, 11/760 and 11/775 will be licensed at \$24,900. The compiler for Microvax computers will be licensed at \$4,990, and the compiler for a Vaxcluster system will be licensed for \$14,990.

DEC is located in Maynard, Mass. 01754.

IBM from page 45

Documentation has been enhanced and installation and tailoring simplified.

On-line access is provided to internal application data to assist in determination of Mapiex II system status. Workstation data entry is simplified through screen displays that provide guidance for mandatory input. Password security is included as are features to assist in establishing audit trails.

Mapiex II components will be available gradually between now and second quarter 1985. The 16 modules cost from \$2,500 to \$10,000 with a basic license price of \$86,800 for all modules.

IBM's National Accounts Division is located at 1153 Westchester Ave., White Plains, N.Y. 10604.

CREATING CUSTOM APPLICATIONS BY SELECTING MENU SELECTION

Perhaps the most significant aspect of Smart Software is its unique "project processing" capability. It allows the user to set up customized projects, like a monthly sales report system or multi-user business plans, simply by doing them once.

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COMMUNICATIONS

New services for Centrex aired at TCA

By John Etkin
CW Staff

SAN DIEGO — Centrex users, the largest single block of all telecommunications users, wanted to know about the future of voice/data support when they met at the Telecommunications Association (TCA) conference here recently.

The Centrex Users Group heard AT&T Network Systems officials discuss new products that will enable local telephone companies to offer Centrex customers simultaneous voice/data support.

Also discussed at the meeting, where representatives from the divested Bell operating companies spoke, were capabilities that are promised for the future and some newer features that are becoming available now.

Centrex users represent the largest single block of users in regards to telecommunications expenditures, noted John D. Bray, vice-president of marketing for American Telecorp. in Redwood City, Calif., and formerly Centrex product manager for Pacific Telephone in San Francisco.

With the addition of new equipment slated for release shortly by AT&T Network Systems, the former Bell operating companies will be able to extend simultaneous voice/data support to individual Centrex lines. With Centrex, every phone within a user organization is supported by

See CENTREX page 58

■ ITT announces terminal-originated, hand-delivered electronic mail service for large and small users/68

J. Robert HARCHARIK

J. Robert Harcharik is president of MCI Digital Information Services Corp., where he is responsible for managing and marketing all of MCI's proprietary data services. He came to MCI in 1983 from the data network company Tymnet, Inc., in Cupertino, Calif., where he was president. Senior Communications Editor Phil Hirsch interviewed him recently in his Washington, D.C., office.

Q What are some of the benefits of MCI Mail?

The usefulness of our service doesn't depend on who is directly connected. An MCI Mail subscriber can reach almost anyone since his message can be delivered by courier or by the [U.S. Postal Service]. And through linkage with other networks, we can deliver messages to those who have terminals, but aren't directly connected to MCI Mail. Telex users here and abroad can send and receive MCI Mail messages, for example, and so can subscribers to the [Dow Jones & Co.] News & Retrieval Service. In some cases, however, they only receive MCI Mail; in that case, we deliver the message by telephone through our "phone alert" service.

Adding these passive users to our directory makes MCI Mail more valuable because it means our active subscribers can send messages electronically to a larger group. And of course, as the passive users receive messages, we expect them to see the virtues of MCI Mail and become active customers. Right now, roughly 50,000 of our 150,000 customers are in this passive category. We will be increasing that number in coming months.

Q Is the long-term growth of electronic mail dependent on technology or pricing?

No, I think it depends mainly on the personal computer. As more and more personal computers come into use, and as

people become familiar with them, you'll see computers originally purchased for another reason being used for electronic mail. And as the number of users grows, the value of networks like ours will increase.

Q What are some of the enhancements being added to MCI Mail?

Recently, we announced Document Plus, a software-based system that allows boldfacing, subscripts, underlining and similar text processing commands to be transmitted automatically between different brands of word processing equipment. Document Plus interconnects word processors made by seven different manufacturers; they represent about 85% of the installed base.

We've just announced another software enhancement, called MCI Mail Ac-

cess. It costs \$49.95 and makes it much easier for customers to communicate with our network through personal computers. We have developed an interface between MCI Mail and certain in-house electronic message systems — Citibank N.A.'s network is an example — which allows their users to communicate with our customers.

[Data General Corp.] has also implemented this interface throughout its CEO line of office automation products. And we're looking at a scanner that can convert text into various word processing formats.

Q What about competition? Is AT&T likely to offer an electronic message service? What still happens to Etc./Econ, a money-losing bulk electronic mail service the U.S. Postal Service launched in 1983 and recently decided to disavow?

We hear AT&T Information Systems will announce an electronic mail service next month. Regarding Econ, we understand the postal service is going to issue a request for procurement [RFP] before the first of the month. We're interested in

See MCI page 60

DATA STREAM/JAMES CONNOLLY

User sings breakup blues over data link runaround

Amid the postdivestiture horror stories, one hears tales of month-long waits for telephone installations and repairs and complaints about one former AT&T unit passing the buck to any and all other divested Bell companies.

An engineer with a Massachusetts manufacturing firm recognized that these problems occurred and had experienced his own problems in ordering private data lines for computer-aided design and manufacturing links among his employer's Massachusetts and New Hampshire facilities.

But even that seasoned professional, who asked not to be identified, was left dazed trying to comprehend why a 2.8K bit/sec data circuit linking a Massachusetts border town to a New Hampshire border town — 10 miles or less as the crow flies — stretched down and up the East Coast for 860 miles.

For more than three months that circuit was routed through a New England Telephone Co. local office in Massachusetts, then onto an AT&T Communications Inc. office in Philadelphia, to Trenton, N.J., to an intermediate point that the customer could not remember the name of, to New York, to Manchester, N.H., and, finally, to the New England Telephone office across the border from the point of origin.

"The biggest problem was that, after all of that, the circuit didn't work. We didn't order C-3 conditioning on the line, which we normally would on a long-haul circuit, because we didn't

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COMMUNICATIONS

DETOUR from page 57

know it would be 880 miles long. We were getting marginal circuit levels on it, so we couldn't use it," the engineer said.

"It's just an excellent example of the insanity that's going on out there," he added. He said even a 50-mile circuit through Manchester would have been acceptable.

"An AT&T spokesman was surprised to hear about the engineer's complaint and said it was the first example of that type of problem he had encountered. He noted that on some services, such as Digital Dataphone Service, AT&T had encountered facilities problems that have meant circuitous routing of dedicated lines.

He also said that "because of the difficulty we have had in getting local telephone companies to process these orders, there is the potential for problems to develop."

The engineer quoted his AT&T account representative as telling him that the uncertainty over local connect charges was keeping AT&T from adding Inter-Local Access and Transport Area Lines that AT&T preferred to lease old lines from operating companies such as New England Telephone.

But even considering that, the engineer discovered, there was no need to route his data through Philadelphia because more direct circuits were available.

Those circuits, however, were not listed in the AT&T circuit design data base in White Plains, N.Y.

CENTREX from page 57

a separate line running back to a telephone company's central office switch. This obviates the need for the user to house any of his own private branch exchange (PBX) equipment.

Typically a voice service, when a telephone company upgrades its Centrex offering with the addition of the Data Communications package, users will be able to use each Centrex line to support voice and up to 9,600 bit/sec of asynchronous data simultaneously over a single pair of wires. The one requirement is that the customer be located within three miles of the telephone company switch.

Requires data set, interface

Richard G. Sanders Jr., product manager for local space division switching systems for AT&T Network Systems, said that the new equipment requires the telephone companies to install some devices and the user to have on his desk a \$150 data set with an RS-232C interface. Eventually, the end-user hardware will be integrated into a telephone set.

Data signals generated from the user's desk can be fed back into the customer's organization through other Centrex lines, or routed to a bank of modems within the telephone companies' facilities to be modulated and sent elsewhere. Users are billed for modem usage, which should make the service attractive to sporadic users — they do not have to buy their own modems — but impractical for customers with greater data needs, Sanders said.

Eventually, Sanders said, the telephone companies will be able to offer users 19.2K bit/sec support for asynchronous or synchronous traffic.

Other Centrex capabilities

Sanders also discussed other Centrex capabilities that are expected to be made available beginning next year. These include:

■ Use of a personal computer to handle station management and call detail recording. This will enable a user to perform phone number swaps in batch mode

when desired and to collect data on calls made.

■ Support of a message center and a directory assistance function through use of an IBM Series/1 mini-computer that could be located at the user site or at the telephone company.

■ The ability to support 20 to 40 line telephone sets over standard four-pair telephone wire, which is typically available throughout a customer's premise. When used in conjunction with a personal computer capable of performing moves and changes, this will eliminate the need to call a telephone company representative to relocate these large sets.

Another topic that generated interest at the meeting was Corecom, a billing option now offered by Pacific Northwest Bell Telephone Co., which serves Washington, Oregon and parts of Idaho.

With Corecom, the service cost depends on the distance between the user's location and the serving switch and on feature utilization, which is charged by how much time the customer uses the computer that provides the features, instead of a simple blanket Centrex rate.

Gary Miller, an industry manager with Pacific Northwest, said that the service is modeled after the trunk availability typical of a PBX. With Centrex, because every phone is directly connected to a telephone company switch, callers can always get a dial tone. But because of usage patterns, most of that capacity is not needed at all times.

With Corecom, as with PBXs, fewer trunks are utilized to connect the user to the telephone company switch, which leaves the possibility of some calls being blocked.

It is designed in such a way, however, for one out of 100 call attempts to be blocked at the busiest hour during the busiest month.

Miller said that, on average, Corecom can save users 15%, or roughly \$4,000/mo, over their current Centrex bills.

On the high side, he said, the company has one customer that is saving \$20,000/mo using Corecom. He was unsure when and if the other former Bell operating companies would offer similar services.

Before you applaud IBM's song and dance for the 3705 Communications Controller, talk with Centrex DPL about your 3705.

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ITT electronic service sends mail from terminals

SECAUCUS, N.J. — ITT has announced an electronic message service that allows large business, small business and residential users to send messages from computer terminals and have them delivered by the U.S. Postal Service within two days.

ITT Speedmail is said to allow senders to originate messages on any communicating terminal — word processors, personal computers and telex or computer terminals — and to transmit them to ITT, which then transmits the message to ITT Speedmail regional distribution centers. At those centers, the messages are printed,

put in envelopes and passed on to a post office for delivery.

While available to small-volume users, the service is targeted to businesses with large bulk-mail requirements, such as sales notices, billing reminders, product recalls and dealer and agent notifications.

Available now, ITT Speedmail offers delivery to major U.S. cities within 24 hours, while 96% of all other U.S. cities, U.S. territories and Canada are targeted for delivery within two days.

The company said there are no subscription charges or minimum usage requirements, but that rates decrease as monthly volume increases. The price for a single one-page letter is \$2.65; for a one-page letter when monthly volume is 100,000 units, the price is \$1.00. Additional pages in any message are 60 cents.

Further information is available from ITT, 100 Plaza Drive, Secaucus, N.J. 07096.

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Since 1977, hundreds of companies all over the world including Bell Labs, Citicorp, ITT, Litton, Westinghouse — have used Local Data products to make IBM communications easy and inexpensive.

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- SNA/SDLC or BSC protocols supported. SNA is PU type 2.
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- Auxiliary printer support allows each async port to have a separately addressable 3207 type printer. This feature enables dual users to combine CRT and print data over one display line.
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- Micro to main-frame support with our FileLynx™/3278 program for the IBM PC and PC compatibles supports terminal emulation and file transfer (upload/download).
- Hard copy RSR support with our "Paper3278".
- Unique "paging" feature supports emulation of all models of the 3278 display station.
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- RS-232C sync ports.
- Data rates to 19,200 bps (sync &

- Async ports may be configured for any of 15 fixed bit rates or "autobaud", with or without parity checking, and with a specified character format.
- Simple DTE/DCE change on all ports.
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- Emulation of standard 3278 keyboard functions is tailored for each supported terminal type.
- 25th status line emulation.
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MCI from page 57

this, but we won't decide whether to bid until we've seen the RFP.

Q Do you have any plans for a packet-switched service?

A Yes, our system is called the Virtual Private Network (VPN). It will be in beta test at a customer's site this fall, and we should be ready for additional customers by the first quarter of next year. VPN will be a lot like AT&T's AccuNet packet service, but less expensive. It will be quite different from Tymnet's or GTE Telenet Communications Corp.'s service.

Q What will be the major differences?

A They reach lots of customers who have lots of asynchronous terminals located in lots of cities. Both Tymnet and Tymnet support standard protocols. We think there is a growing need for a packet-network service designed for the large customer, one who has a lot of terminals and hosts connected in relatively few locations. Our service will be customized rather than standardized.

Q What about the future of Digital Termination Service (DTS)? Will it become a major by-pass medium? Do you use it?

A Not until it provides more capacity. What you need is a system that can provide voice as well as data communications service to a much larger number of users than the initial technology could reach. But that's coming. The first systems were limited mainly because they used an omnidirectional transmission scheme; users had to share a limited bandwidth. The newer systems operate in a point-to-point mode; each user has exclusive use of a much greater bandwidth. We're using point-to-point DTS channels right now in Chicago and Washington to connect MCI Mail centers with the MCI backbone network.

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...can help you make the most of your time and the money you spend and the time you never stops.

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...can help you place or receive services in a more secure way, never before.

The SAS System...

[illegible]

The photograph shows a document with a table and a small diagram. The table has two columns: 'Date' and 'Description'. The 'Date' column contains dates from 1/1/80 to 12/31/80. The 'Description' column contains text describing the work done. To the right of the table is a small diagram showing a cross-section of a structure with various layers and components labeled.

A black and white photograph showing a clipboard with a form and a calculator. The clipboard is tilted, and the form has various fields and text, including a header that reads "PROPERTY OF THE U.S. DEPARTMENT OF AGRICULTURE". The calculator is partially visible in the upper left corner.

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17

national language key-boards are available to make work easier for everybody, just about everywhere.

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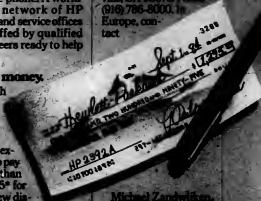
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SYSTEMS & PERIPHERALS



HARD TALK
Tom Ichniowski
On Senior Editor

Rumors abound on Sierra debut

Rumors are not a common battle cry at IBM. But the latest rumor making the rounds in the IBM-watching community contends IBM has decided to delay plans to unveil its Sierra line of mainframe processors by the end of the year.

Tales of nagging technical problems, coupled with reduced pressure from IBM competitors, has led some industry watchers to believe IBM may delay the Sierra's debut from six months to a year.

The rationale behind the rumor goes something like this:

Because Trilogy Ltd. bailed out of the high-end processor business and Amdahl Corp. does not appear to be burning up the marketplace with its high-end offerings, the pressure on IBM to top off its mainframe lineup with a processor in the 30+ million-instructions-per-second range is not as intense as it was six months ago. Consequently, IBM may seize the opportunity to extend the life of its 3080 line of mainframes and use the extra time to iron out any last bugs in the Sierra system.

Opposing rumors

As with most rumors that sweep through the IBM-watching community, there is usually an equally convincing opposite rumor. This case is no exception.

There are still a fair number of analysts convinced that IBM will announce the Sierra on schedule, either late this year or in the first quarter of 1985. Those analysts say the Sierra is ready—possibly already in an IBM test site—and IBM users are already jockeying for early delivery positions late this year. Furthermore, the analysts say IBM has already gone out on a limb by gearing up its production lines to build the Sierra. If IBM was to pull back now, it would be left with a huge revenue gap that sales of peripherals and smaller mainframe systems simply could not fill.

One of the strongest arguments for a delay is the absence of a larger version of IBM's 3380 disk drive. It is hard to find any IBM watcher who is not absolutely convinced IBM is poised to announce a larger version of the 3380 before the end of the year. In fact, most industry watchers have now agreed the unit will offer a storage capacity roughly 1.6 times that of the current 3380. The questions that remain are whether the new 3380 will be field-upgradable from current 3380 units and whether the new device will support a 3M byte/sec or 6M byte/sec data-transfer rate. Many industry watchers feel IBM will switch to a 6M byte/sec data-transfer rate on the Sierra. IBM also is said to have agreed to work with making large strings of the current 3380 disk drives operate efficiently. That problem appears to have been addressed by IBM Sept. 18, when Big Blue gave users the ability to "roll up" to 32M bytes of cache memory on the 3380.

See DEBAY page 72

Tektronix offers graphics units, enters 32-bit workstation fray

By John Deamond
Oak Shof

BEAVERTON, Ore. — Tektronix, Inc. has announced the 6000 family of 32-bit graphics workstations, with six models based on the National Semiconductor Corp. 52016 and 58023 microprocessors. The units feature main memory range of 256K bytes to 4M bytes.

The 6000 family includes an instrument controller, four graphics displays, software and peripherals. The series is targeted to applications ranging from process control to integrated circuit layout and simulation, the vendor said.

The 6000 family consists of the 6100 and 6200 series, which have three models

each. The 6100 series supports a 16-in. monochrome display with 640- by 480-pixel resolution, as well as a 13-in., 16-color display with 640- by 480-pixel resolution, the vendor said. The 6200 series supports a monochrome or color display, each with screen resolution of 1,024 by 78 pixels.

The 6000 family displays feature a 80Hz, noninterlaced refresh rate, tilt-and-swivel, detached keyboard and Digital Equipment Corp. VT102 emulation, the vendor said. The family is said to support Tektronix 4010, 4100 and 4110 terminals.

The 6100 series is based on the National Semiconductor NS32016 32-bit micro-
See 6100 page 70

■ A team of MIT scientists has developed an experimental robot vision system which they claim is faster and more accurate than currently used techniques. □

Raster-scanning workstations offered in Computervision's CDS 3000 series

BEDFORD, Mass. — Computervision Corp. has announced two workstation additions, the 3420 and 3421, to its CDS 3000 series, featuring raster-scan technology, 900- by 1,152-pixel resolution and support for 16 colors from a palette of 4,096.

The 3421 is intended for stand-alone applications, while the 3420, which includes an Ethernet controller, is intended for networked applications. The 3000 series is targeted to computer-aided design and manufacturing applications.

The systems, based on the Motorola, Inc. 68010 microprocessor, run the AT&T Unix operating system as well as support Fortran 77, Pascal and C languages.

The 3421 is priced at \$51,600, while the 3420 costs \$42,800, the company said. The product will be available in the fourth quarter.

Computervision also announced 30% price cuts on other members of the CDS 3000 series, including the CDS 3300 mono-
See CDS page 70

Arete 1124 couples 32-bit processors

WASHINGTON, D.C. — Arete Systems Corp., based in San Jose, Calif., chose the recent Federal Computer Conference to introduce its first multiple microprocessor system, the Model 1124.

The system is based on a Motorola, Inc. 68000 microprocessor and uses the AT&T Unix operating system.

Arete said the Model 1124 contains a proprietary multithread architecture that tightly couples the 32-bit processors and

increases the units' processing speed.

The Model 1124 is designed with mirrored disk drives, power margining, memory protection and cooling. Internal communications are accomplished by a 33.3M-byte data-transfer bus.

Within the Model 1124 are spaces for 10 card slots to accommodate various configurations, the company said. Three slots are for CPU and memory cards, while six
See ARETE page 70

Metaphor inaugurates customized system

By Nathan Sullivan
Oak West Coast Bureau

MOUNTAIN VIEW, Calif. — After two years of research and development, Metaphor Computer Systems, a fledgling computer company founded by two former Xerox Corp. executives, recently introduced its first product: a special-purpose computer system said to give managers a customized view of the corporate data base.

Metaphor's information retrieval and analysis system was designed to operate in conjunction with IBM and IBM-compatible mainframes running IBM's VM or MVS operating systems. The system includes hardware and software designed to extract raw corporate and commercial data from mainframe production files and data bases.

The Metaphor system is said to reorganize information for users by storing it in a structured form in a data base server. Sitting at workstations, users can gain access to this data using Metaphor's integrated

software tools, which use icons to guide users through data base management tasks. The software also includes programs for information gathering, analysis and presentation, the vendor said.

Metaphor's system includes individual workstations based on Motorola, Inc.'s 68000 microprocessor, shared file servers, data base servers, mainframe communications servers and printers. All of the devices are connected via the Ethernet local-area network. The communications server, designed by Cupertino, Calif.-based Bridge Communications, Inc., acts as a link between the network and the host mainframe.

Before Metaphor installs a system, the company works with a firm's users and corporate MIS department to decide what information from the mainframe will be extracted, translated, reorganized and stored in the Metaphor data base server. This initial consultation is included in the price of the system. Metaphor offers additional support and service based on
See METAPHOR page 72

X



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SYSTEMS & PERIPHERALS

Vision system seen changing face of robotics industry

By Edward Warren
CW Staff

CAMBRIDGE, Mass. — The days when a robot couldn't pick an apple out of a jumble of oranges simply by looking at it appear to be over.

While orange growers may treat that news with indifference, the recent development of such a robot vision system could mark a breakthrough in the electronics industry, where robots are assembling circuit boards and microcomputers. Parts for those products, especially switches and transformers, had been difficult for a robot to remove from the parts bin because, typically, a robot cannot see three-dimensionally, according to Berthold Horn, associate

professor of electrical engineering and computer science at MIT.

In addition, Horn elaborated, once robots had found the part using touch sensitivity — most couldn't tell which end of it was up. That is, until Horn and Japanese scientist Katsushi Ikeuchi developed what they feel is an improvement on robot vision.

They call their improvement "photometric stereo vision." Unlike current three-dimensional vision systems, which take up to an hour to "see" an image and thus cannot be used in manufacturing, the scientists' system "sees" an image in one minute. Further research will likely reduce its reaction time to four sec-

onds, Horn noted.

That research, though, will be conducted by robot makers, not by MIT. The system, developed under a group of government contracts and reported in a recent issue of *Scientific America*, is not patented. Several robot vision system firms have already expressed interest, according to Horn.

The Horn/Ikeuchi vision system was developed in MIT's Artificial Intelligence Laboratory using, among other things, a video camera and an MIT-made computer programmed in Lisp. It was tested by guiding a robot arm working with a modified version of the Flasher-Price Co.'s "Rack-and-Stack" toy.

The toy consists of several cones, onto which children stack plastic rings, from the widest on the bottom to the smallest at the top. The vision system was only required to pick up and place rings of the same diameter on the cone. The rings were jumbled together in a pile — something that would confuse conventional vision systems. The robot picked up each ring, held it at the proper angle — a must for placement of any part — and put it on the cone.

The system works by rasterizing (breaking into electronic segments) the image of a part and then storing that image in memory. When the robot arm must withdraw that part from the jumble of parts in an adjoining parts bin, the new vision system flashes three lights from different directions into the bin — giving the stereo effect — and the computer brain of the robot recognizes the top-most part, no matter what its position.

Because the system can be reprogrammed, Horn said, it will likely be used by manufacturers who are big enough to afford robots, but unable to afford the custom robotic installations common to major manufacturers. It will likely be used "anywhere you see people picking parts out of a bin," particularly in electronics and computer manufacturing, Horn said. It could also be used for rudimentary inspection of finished assemblies, he said.

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SYSTEMS & PERIPHERALS

6100 from page 65

processor with an external 16-bit bus. The series includes the 6110 instrument controller, a cassette unit for instrument and process control; the 6120 intelligent graphics workstation, a basic-oriented configuration that targets science and engineering applications; and the 6130 intelligent graphics workstation, targeted to engineering data analysis, software development and com-

puter-aided engineering.

The 6200 series is based on the NS33016 and NS33032 with a 32-bit data bus and intelligent I/O processing for higher performance. The company's Global Bus for connecting subsystems is a standard, 40M byte/sec interface said to aid expandability.

The 6000 family runs the company's version of AT&T's Unix, said to be compatible with System V and University of California at

Berkeley 4.2 versions. Software support includes a relational data base manager and Environment, a group of software products including a graphics editor, a document processor and a project management system.

Compatible software

The Model 6130 workstation is said to run software compatible with Digital Research, Inc.'s CP/M-86 and Microsoft Corp.'s MS-DOS.

Applications development

tools supported by the 6000 family include Tektronix graphics libraries, Plot 10 terminal control system, Plot 10 interactive graphics library and Plot 10 Teknical computer-aided drafting software. Language support includes Fortran 77, C, Pascal and the proposed Anal Basic, the company said.

Interfacing options for the 6000 family include RS-232C, RS-422, Ethernet (IEEE 802.3 standard), Intel Corp.'s Multibus, Centronics Corp.'s

Centronics interface, the small computer standard interface and IEEE 488, the company said. With the Ethernet-based local-area network, the workstations can communicate with DEC VAX-11s running DEC's VMS operating system and VMS-compatible versions of Unix.

The price for a Model 6120 with a monochrome display, 1M byte of main memory, a 360K-byte diskette and two RS-232C interface ports is \$7,995, the company said. The price for a Model 6212 with a 10-in. display, 4M bytes of main memory, 80M-byte Winchester disk drive, and one RS-232C, one RS-422 and three RS-232C interface ports, is \$49,450, the company said.

The workstations will be available in February, except for Models 6110 and 6212, which will be available in May, the company said.

Tektronix can be reached through P.O. Box 500, Beaverton, Ore. 97077.

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CDS from page 65

chromatic desktop, the CDS 3400 monochromatic console workstations and the CDS 3900 Shared Resource Managers.

The prices for the CDS 3900 workstations now start at \$28,000 for the desktop version, the company said. Prices for the CDS 3900 Shared Resource Managers, which support disk and tape drives, start at \$50,000.

Computervision is located at 100 Crosby Drive, Bedford, Mass. 01790.

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are slated for I/O expansion. The remaining slot is devoted to a memory controller that manages internal communications. Internal memory is available in 2M-byte increments, according to the company.

The Model 1124 is priced from \$60,000 to \$75,000, depending on the memory configuration.

Arete is located at 2040 Hartog Drive, San Jose, Calif. 95131.

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SYSTEMS & PERIPHERALS

INTRO from page 65

heavily consulting fee, the company said.

In addition, Metaphor has formed an agreement with Arthur Andersen & Co., a Chicago-based accounting and consulting firm, whereby Metaphor customers pay the firm a fee for independent consulting services. The system was initially targeted to finance and marketing managers in three industries: commercial banks, finance departments of Fortune 500 firms and consumer packaged goods companies, Metaphor said.

In-depth managerial interviews

Donald J. Massaro, Metaphor's chairman and chief executive officer, told the firm conducted 350 in-depth interviews with managers in more than three dozen Fortune 500 companies before designing the system.

Massaro, former president of Xerox's Office Products division, founded Metaphor with David E. Liddle, Metaphor's president and chief operating officer and former vice-president and general manager at Xerox's Office Systems division.

Metaphor has developed 60 application packages for

product marketing managers and 50 programs for financial analysts. In addition, users can develop their own custom applications, Massaro said.

Two installation locations

The company already has installed its system in two locations — at Bank of America's retail bank in San Francisco and in a department of the Chicago offices of Baccarat Foods Co. Metaphor is in the process of installing a system for PepsiCo, Inc. in White Plains, N.Y., according to Liddle.

The system will be sold through a direct sales force. An entry-level configuration of eight workstations, with a 72M-byte file server, the firm's Model DBS100 data base server with an additional 72M-byte data base storage module and a full set of user and host communications software, sells for \$64,000.

The addition of a four-port asynchronous or bi-synchronous host communications server and a high-resolution dot matrix printer adds \$10,000 to the cost of the basic configuration.

Metaphor is located at 2600 Garcia Ave., Mountain View, Calif. 94043.

DELAY from page 65

Model 31 and 33 disk control units. Those units will not be available until at least the end of 1984, indicating that if IBM was to announce a larger disk drive, chances are it would not be generally available until at least the spring of 1985.

Then there is the 3480 tape drive. Announced by IBM in March, the unit is slated to be generally available in first-quarter 1985. Dunsen says earlier claims of problems with the 3480, IBM appears to be on schedule with that projected delivery, according to most industry watchers.

The larger 3390 disk drive, the new 3390 controllers and the 3480 all appear to be vital peripherals for the rumored Sierra. Getting all three into the general IBM user community well before the Sierra announcement would make a great deal of sense. For one thing, it would give users a chance to study the new peripherals and become familiar with their use. Also, it would give IBM time to iron out any bugs that commonly crop up in complex new products. On the other hand, availability of the three new products could also be viewed to mean that all the preliminary pieces necessary for the Sierra's announcement are in place. All that remains is the actual announcement.

The recent price cuts on IBM's 3080 series mainframes can also be considered another glimpse into the future. The obvious implication is that IBM would like to sell off as many 3080s as possible before the Sierra is announced. How soon that will happen is another question.

The longer IBM waits to unveil the Sierra, the greater the likelihood becomes that more users may take advantage of those price cuts. The play could also backfire, however. Users could defer buying 3080 processors because they want to know whether the rumored Sierra will replace or supersede the 3080 line.

Then there are rumors that IBM will announce dual-processor versions of its 2084 processor complex (making an eight-processor configuration) and the smaller 4381 mainframe (possibly in conjunction with price cuts on 4381 single-processor models). On one hand, those rumors could be viewed as evidence of a delayed Sierra project. On the other, they could mean IBM is restructuring its mainframe line in light of an impending Sierra announcement.

The period from September to December has been called the "wild season" within IBM. It is a time when many research groups are rushing to finish various projects before the year's end. It also is a time when IBM traditionally floods the marketplace with a laundry list of fairly major products. The combination of the two events seems to lead inevitably to rampant rumors about IBM's direction.

Obviously time will tell what really happens. It is not generally a good idea to put too much faith in the rumormongers of the IBM-watching community. But you have to admit — Rumors are fun.

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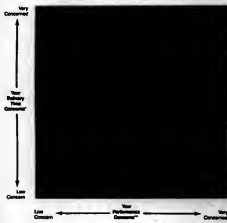
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MICROCOMPUTERS

Datapoint moves to link ARC net, IBM micro

Software, interface card open net to equipment of other manufacturers

By Charles Rabeau
CW New York Bureau

Datapoint Corp. last week was slated to introduce software and an interface card that will tie the IBM Personal Computer into Datapoint's Attached Resource Computer (ARC) network.

The move is the first step toward opening the proprietary Datapoint local-area network to the equipment of other manufacturers, a direction the company had stated previously (CW, June 11).

Although the IBM Personal Computer was clearly a first choice, Datapoint officials said they are conducting technical feasibility studies on the equipment of Wang Laboratories, Inc. and three or four other popular office equipment makers to see whether those products can be added

to the network.

The software, which modifies the PC-DOS operating system on the IBM machine, and the interface card will be bundled together for \$779 per micro. Shipments will begin in late November or early December, company officials said. Customers may install the cards themselves.

The ARC network, a token-passing branch network, can link up to 255 desktop computers, printers, disk file systems or smart terminals. Additional dumb terminals can be attached to the smart units. An electronic signal, or token, is periodically sent along the network and, with the proper coding, can send or receive data from different stations on the network.

The interface card being produced for the IBM Personal Computer uses a Zilog

280 microprocessor. The card, called the Intelligent Network Executive-PC, will allow an IBM Personal Computer user to alternate between the PC-DOS operating system and the Datapoint operating system.

According to Michael A. Gailup, vice president for strategic planning at the San Antonio firm, "If you are reading a file at your [Personal Computer], and you want to see the updated file in 16M-byte storage, you give the command, and you aren't even aware that it switches onto the network to execute it."

"This is not going to boost revenues by \$200 million," Gailup said. However, it is an important product to Datapoint, he added, because the company is hoping to establish the ARC network as a way to link

See IBM page 82

■ Percept announced a presentation graphics program for the IBM Personal Computer that is designed to take advantage of the Percept graphics tablet/78

■ Bank of America has offered an international currency program that runs on IBM micro/78

INSIDE

Software/86

Software Arts shows desktop management software

WELLESLEY, Mass. — Software Arts, Inc. has announced Spotlight, a desktop management system that runs on the IBM Personal Computer with IBM's PC-DOS operating system.

Spotlight has five functions: appointment book, on-screen calculator, phone listing, DOS filer and notepad, according to Software Arts.

The new package avoids the drawbacks of previous desktop management packages, claimed Software Arts Chairman Dan Bricklin. "Desktop managers have not been very popular because they sacrificed certain functions or required too much work from the user," Bricklin said. "We were careful to include only needed functions without sacrificing ease of use."

Spotlight can be loaded into random-access memory so that it runs in background with many popular microcomputer soft-

ware packages, according to Bricklin. Users can move from the program they are running to Spotlight with a single key-

The package avoids the drawbacks of previous desktop management packages.

stroke. When they finish with Spotlight, two keystrokes return them to wherever they were working on.

The appointment book reportedly displays daily schedules, weekly meetings and monthly calendars. Spotlight depicts daily appointments in 15-, 30- and 60-minute intervals, accommodates up to 90

meetings a day and indicates when meetings overlap, the vendor said. Regular weekly meetings can be automatically placed throughout the appointment book, according to the vendor.

The on-screen calculator performs standard arithmetic calculations that can be inserted into the working program with two keystrokes, Software Arts said.

Spotlight's phone listing is said to contain up to 36 lists with up to 600 entries each. Names are filed alphabetically.

The DOS filer feature allows a user to access files on a disk and provides lists of all files and directories. Users can display and sort directories and subdirectories, and disks can be formatted from the filer, the company said.

Spotlight costs \$149.95. Software Arts is located at 27 Mica Lane, Wellesley, Mass. 02181.

PC Network pushes technology



IBM's recently announced PC Network represents a remarkable step forward in the use of available technology and an apparent effort to preempt a major segment of the local-area network market.

As previously noted, IBM bought the broadband technology for the PC Network from Sytek, Inc., of Mountain View, Calif., and the network medium can be constructed of standard and easily available CATV components.

Because a broadband system must be carefully engineered, IBM introduced three standardized cable

kits for small, medium and large systems with precast cables and appropriate frequency translators and amplifiers. The announcement also made it reasonably clear that those generalized components must not necessarily be acquired from IBM.

The basic PC Network, using one of the standard cable kits, supports up to 72 Personal Computers and can be installed by users. A custom cable system designed and installed by CATV vendors will support up to 255 Personal Computers within a radius of 1,000 feet.

Since many organizations already have two-way CATV systems, the PC Network Adapters (installed in each microcomputer) may be included in such a system in combination with other data, voice and video services. Although the IBM PC Translator Unit cannot be used in such a system, up to 1,000 Personal Computers could be supported over a three-mile radius.

Sytek will assist in the design and

See IBM page 81

Madron is manager of computer services at North Texas State University, Denton, Texas.

Tandy micro boasts IBM Personal Computer XT compatibility

By Edward Werner

CW Staff

HOUSTON — Tandy Corp. has unveiled an IBM Personal Computer XT clone that features a 10M-byte hard-disk storage unit, 256K bytes of internal memory and a \$2,999 price tag — roughly \$1,400 less than the cost of a comparable IBM machine.

Tandy's 1200 HD will be marketed to "the [Personal Computer] XT customer who doesn't want to spend that much for [Personal Computer] XT," according to Bernard Appel, president of Tandy's Radio Shack division. The new model, shown here last month, will be sold by the firm's Radio Shack stores and its Computer Centers, he said.

The new personal computer is being manufactured for the Fort Worth, Texas, electronics firm by an undisclosed supplier. The system is said to be based on the Intel Corp. 8086 microprocessor and to include one 360K-byte diskette drive, but no monitor or video interface card.

Reaction to the product among in-

dustry analysts was mixed.

Tim Bajarin, with Creative Strategies International, Inc. of San Jose, Calif., said that the 1200 HD is likely to be fully compatible with the IBM Personal Computer, differentiating it from Tandy's Model 2000.

Ken Churilla, vice-president of Creative's microcomputer industry group, suggested that potential Personal Computer buyers might not consider either the Radio Shack stores or the Computer Centers as the place to find a Personal Computer XT-compatible machine. Marketing the new computer will prove "a real challenge" to Tandy because its market has traditionally been low-end, small-business users, he said.

Tandy may have hitched its wagon to a falling star, commented Lloyd Cohen, manager of market analysis at International Data Corp. in Framingham, Mass. Personal Computer XT sales will drop "because the [Personal Computer] AT is going to take over," he said.

See TANDY page 82

MICROCOMPUTERS

Pencept unwraps presentation graphics package

Videogram enables IBM Personal Computer users to create slides

WALTHAM, Mass. — Pencept, Inc. has introduced Videogram, a software package for the IBM Personal Computer and Pencept's Pempad 320 input tablet that permits users to create presentation graphics by writing and drawing with the Pempad's pen.

Videogram enables users to draw, color, graph, label, chart, move, create and undo images, according to company President Leo Shpis.

The Pempad 320's pen invokes program commands that appear at the top of the tablet as a series of icon boxes, while user prompts appear on the screen's 25th line, Shpis explained. The tablet recognizes handprinted letters and numbers, he added.

The package, reportedly provides users with 16

colors, 37 fonts, a shape library, more than 54 paintbrushes and the ability to can change images pixel by pixel.

Enhances graphics

Graphics produced by packages such as Lotus Development Corp.'s 1-2-3 can be enhanced quickly by Videogram, Pencept said.

Videogram includes an automatic interface with Polaroid Corp.'s Palette slide-making system. The interface permits presentation graphics to be developed in-house, an advantage in situations where confidentiality and speed are concerns, according to Shpis.

The package also is said to support the IBM color printer, the Diablo Systems, Inc. C160 and Quo-

drum Corp. QuadJet ink jet printers and several other output devices.

Electronically slide shows

In addition, Videogram reportedly permits the development of electronic slide shows for screen presentations.

The program requires the 8086 Pempad 320 (with its associated option board) and an IBM Personal Computer, Personal Computer XT or Personal Computer AT with 320K bytes of random-access memory. Printer support requires 384K-byte configurations.

Videogram costs \$300.

Pencept is located at 39 Green St., Waltham, Mass. 02154.

World currency program launched

SAN FRANCISCO — Bank of America has announced Microstar International Treasurer, an international currency program that runs on the IBM Personal Computer with IBM's PC-DOS 2.0 operating system.

According to the vendor, the package provides multinational corporations with information to manage international money market activities effectively.

Bank of America stated that corporate cash managers can use Microstar International Treasurer to monitor and analyze foreign exchange contracts, loans, deposits, acceptances, certificates of deposit, payables and receivables in up to 32 currencies.

By converting the holdings into dollar equivalents, the product en-

ables cash managers to calculate gains and losses in each currency, the vendor said.

Microstar International Treasurer reportedly provides information concerning currency positions, current and projected cash flows and credit availability.

The package generates 50 types of reports, including performance appraisal, contract maturity and management reports. Bank confirmation letters and cash settlement instructions can be generated automatically, according to the vendor.

Microstar International Treasurer costs \$10,000.

Bank of America can be reached at P.O. Box 37000, Dept. 5532, Treasury Management Services, San Francisco, Calif. 94137.

Micros get graphics enhancer

SANTA CLARA, Calif. — Mouse Systems Corp. has introduced a graphics package for creating pictures or enhancing graphics and charts for the IBM Personal Computer, Personal Computer XT, Personal Computer AT and PCjr.

The package, PC Paint, provides such drawing tools as color bar, line-width box, patterns and shapes and offers pencil, paintbrush, spray can and text, the vendor said. The program's commands include magnify, show picture, change colors, undo,

cut and paste and invert colors.

PC Paint reportedly offers several type fonts and text sizes and handles entire picture files in a format fully compatible with Polaroid Corp.'s Palette.

An optical mouse, PC Mouse, is available for use with PC Paint. PC Paint costs \$69 and is currently offered with PC Mouse for \$220. PC Mouse alone costs \$195.

Mouse Systems is located at 2336 Walsh Ave., Santa Clara, Calif. 95051.

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TSX-Plus upgrade released for DEC Professional 350

By Kathleen Sullivan
 CW West Coast Bureau

NASHVILLE — SAH Computer Systems, Inc. has announced a new version of its TSX-Plus operating system, the PRO/TSX-Plus — a multi-user, multitasking operating system designed for Digital Equipment Corp.'s single-user Professional 350 personal computer.

Richard Dohrmann, SAH marketing vice-president, claimed the PRO/TSX-Plus turns a Professional 350 with up to 4M bytes of main memory into a "very competitive entry-level

multiuser system."

The PRO/TSX-Plus supports up to three users and is compatible with RT-11, a DEC single-user operating system designed for the PDP-11. Dohrmann claimed. Most programs compatible with RT-11 will run with the PRO/TSX-Plus system without modification, he said.

The PRO/TSX-Plus has several features available in the firm's TSX-Plus operating system, SAH's multi-user, multitasking, real-time operating system for the PDP-11.

SAH said it has improved the performance of the TSX-Plus by increasing data and directory caching, which improves file I/O speed by keeping a cache of the most recently used data in memory. The facility reportedly reduces compilation times on DEC's Fortran and SAH's Cobol-Plus by 20% to 40%.

Additional features include spooled printing, record locking, communications with dial-in support, concurrent program control, logon security, interprogram messages and a virtual debugger.

PRO/TSX-Plus costs \$900 for a single system.

SAH is located at 1027 17th Ave. S., Nashville, Tenn. 37212.

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SOFTWARE

MICROPRO INTERNATIONAL CORP.

Wordstar for the IBM 3270 Personal Computer

Micropro International Corp. has released a version of its Wordstar software for the IBM 3270 Personal Computer.

The Wordstar version offers support for NEC Information Systems letter-quality printers, the Texas Instruments, Inc. TI86 printer and various dot matrix printers. It will also run in conjunction with the 3270-PC's on-screen windows, the vendor said.

Wordstar for the 3270-PC is priced at \$495.

Micropro International, 33 San Pablo Ave., San Rafael, Calif. 94903.

IBM Pilot

IBM has introduced a version of the Pilot authoring language for the IBM Personal Computer, Personal Computer XT, PCjr, 3270 Personal Computer, Personal Computer AT and Portable Personal Computer.

The IBM Pilot reportedly consists of one- and two-character statements that enable teachers or computer-assisted instruction authors to write interactive lesson frames. It is also said to offer a graphics editor and a text editor for 80- or 40-col display.

It offers immediate execution operations and MATCH, JUMP and LINK commands, as well as a facility for saving responses and runtime GOTO and ESCAPE commands.

IBM Pilot is priced at \$200, with a 20% discount available for educational institutions.

Continued on page 82

MICROCOMPUTERS

NET from page 77

implementation of a broadband cable system for the PC Network, including implementation on existing CATV systems. If an organization plans on clusters of PC Networks, clusters can be interconnected with a common "backbone" or trunk line.

Current broadband technology will support a data rate over a CATV channel pair of up to about 5M bit/sec, although the theoretical maximum is considerably higher. Systems that allow high connectivity support up to about 2M bit/sec — the data rate of the PC Network.

The primary issue here is not speed but throughput. There are two ways a large number of signals can go across the cable without degrading throughput: through some form of multiplexing (the most common being frequency division multiplexing, such as that employed in Sytek's Local Net 20) or through a single, high-speed channel (used by the PC Network).

The single, high-speed channel is similar to the system used by Ethernet, which operates at a 10M bit/sec data rate. In this setup, the data rates must be high because only a single signal is allowed on

the cable at one time. An Ethernet will have better throughput than a multiplexed design when the system is handling a large number of signals, but there are disadvantages to Ethernet.

First, many organizations already have installed CATV systems that could support a PC Network. Second, CATV components and cable are rel-

atively cheap. In contrast, the Ethernet coaxial cable is significantly more expensive and must be installed from scratch. This may create resistance, especially in a large organization that has already installed twisted-pair cabling for telephones, 90-ohm coaxial cables for 3270 devices and 96-ohm coaxial cables for CATV. A potential problem

with the use of PC Network on a general CATV system is that all Personal Computers with an adapter card plugged into an institutional trunk line or backbone would be on the same network. At the present time, it is not possible to establish one PC Network for the chief executive officer and another for one or more random departments spread

across a large institution.

There are ways of avoiding this problem, such as the use of specialized radio frequency filters on the cable itself, but no off-the-shelf remedies exist.

Presumably, Sytek will provide a solution for this problem since it is likely to become a major issue even before the first PC Network is installed.

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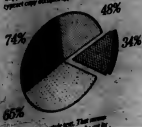
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MICROCOMPUTERS

Continued from page 80

IBM, National Accounts Division, 1133 Westchester Ave., White Plains, N.Y. 10604.

INTECK, INC.

Administrator for DEC Rainbow

Inteck, Inc. has announced that its Administrator office automation software system is now available for use with Digital Equipment Corp.'s Rainbow personal computers running under Microsoft Corp.'s MS-DOS operating system.

The Administrator is an integrated package for scheduling meetings, tracking interoffice memos and detailing personal expenses. Features reportedly include an electronic calendar/scheduler, a personal "to do" list, an electronic directory that finds matches by name or company, an ex-

panded calculator, an expense tracking system, electronic mail and filing and a phone message file.

The package requires a minimum of 256K bytes of memory, one diskette drive and a 5M-byte hard disk.

The Administrator is priced at \$795 for the first copy, \$495 for two to 25 copies.

Inteck, Suite 300, 695 S. Colorado Blvd., Denver, Colo. 80222.

AMERICAN MANAGEMENT SYSTEMS, INC.

Timekeeper's Workstation

American Management Systems, Inc. has introduced Timekeeper's Workstation, an automated time-keeping system for the IBM Personal Computer XT and Personal Computer AT.

Timekeeper's Workstation report-

edly will interface with mainframe payroll systems to speed calculation of regular and exception pay while providing cost analyses, expenditure controls and management reports. Each workstation can process from 50 to 300 or more employees with the software, the vendor said.

The workstation reportedly takes raw time data from an employee badge reader or existing time sheets and automatically calculates the various sets of regular pay, overtime, authorized leave and special exception events based on the employee's particular job and characteristics.

The system is priced at \$4,850 each for the first two purchased, \$4,200 for the next three and \$3,600 for any additional purchases.

American Management Systems, 1777 N. Kent St., Arlington, Va. 22209.

LINK from page 77

microcomputers and other office devices.

"We assume that if you attach 75 Personal Computers into a network, you are probably going to turn to Datapoint for more printers and disk drives," Gallup said. Datapoint also produces a variety of processors and terminals that fit into the network.

Always information sharing

The network also allows multiple Personal Computers to share information or exchange files, the company claimed.

Datapoint said most of the 6,000 users of its ABC network are also IBM Personal Computer users. Companies that are not now Datapoint customers could use the ABC network to link their IBM Personal Computers, Gallup said. A new customer would need at least one file processor from Datapoint at a cost of \$8,100 to establish a network.

Datapoint also announced it has produced a network interface card for its own Vista-PC professional computer and a software package that allows an ABC network to support Digital Research, Inc. CP/M applications.

More information is available from Datapoint at 9726 Datapoint Drive, San Antonio, Texas 78284.

TANDY from page 77

Others argued that the 1200 HD will not have much impact on corporate users, who will get service discounts if they add Personal Computer ATs to their existing flock of Personal Computers and who "don't care if [the 1200 HD] is \$1,000 cheaper."

Radio Shack's Appel responded that the Personal Computer AT is a much more expensive machine and "the [Personal Computer XT] has a huge software base; the [Personal Computer] AT has nothing."

Barbara Lagar, a securities analyst with Paine Webber Mitchell Hutchins, Inc., predicted that the 1200 HD is unlikely to cannibalize sales of Tandy's Model 2000 because "people will appreciate the faster speed and better color [display] of the latter model."

Creative's Bjarin, meanwhile, said that Tandy had also been expected to unveil an IBM-compatible floppy disk drive system priced at \$1,195. Tandy's failure to announce such a product indicates it may have recognized that the market is moving toward high-end systems, he said.

The 1200 HD debuted at a September Tandy-sponsored show of the firm's line of computers and peripherals. Tandy will present several shows nationwide in coming weeks.

The machine will be in Radio Shack stores this month, Appel said. Tandy is located at 1800 One Tandy Center, Fort Worth, Texas 76102.



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COMPUTER INDUSTRY

Makers' share of service mart seen shrinking

NEW YORK — The equipment service organizations of manufacturing companies will retain market share in areas where low growth is forecast, while alternative service providers will gain market share in areas where growth is expected to be high, according to a report released here recently.

The report, prepared by Arthur Andersen & Co. and commissioned by the Association of Field Service Managers (AFSM), predicted that the electronic equipment service industry will more than double by 1990 to \$46 billion in revenues.

Product manufacturers will continue to dominate the service market in 1990, according to the report, but will experience market share losses of 10% or more in all areas other than mainframes and consumer electronics. Manufacturers currently provide 58% of all mainframe service and will provide 77% in 1990, the report said. Only 10% of current service on consumer electronics is currently provided by manufacturers, and that is expected to remain about the same in 1990.

But revenues from mainframe servicing will only grow at an annual rate of 7% over the next few years, while servicing of office automation will grow at a 33% annual

See MGMT page 93

AT&T division restructured with eye to market openings

By Peter Bartels
CIN Staff

MORRISTOWN, N.J. — A recent management reorganization at AT&T Information Systems will make the company more responsive to the marketplace, according to the executive appointed to head the company's financial and strategic planning.

Robert J. Casale, appointed earlier this month to the new executive vice-president position, said in a recent interview here that the unregulated marketing arm of AT&T was reorganized to pursue newly defined opportunities.

The former structure of three functionally separate divisions, each with a presi-

dent, had served earlier AT&T Information Systems goals in getting started as a competitive entity, according to Casale, who was formerly division president of sales and marketing.

He said the company now sees more discrete product market areas to address and is molding its internal structure to reflect that philosophy. "My job is to ensure that, in the design of this new structure and its implementation, we are, in fact, taking advantage of those opportunities," Casale said. "We have a much stronger market base perspective."

While AT&T has positioned itself against IBM across a broad range of products, See AT&T page 95

■ Allegations of lax security were denied by Kaypro Corp. in the wake of the company's acknowledgment that as much as \$6 million worth of inventory is missing and may have been stolen. 8/8

■ Datapoint Corp. purchased an interest in Charles River Data Systems, Inc. and agreed to use Charles River processors in new projects. 9/8

■ Ungermann-Bass, Inc. and General Electric Co. will cooperate in a \$6 million joint venture to develop local-area networks for factory automation. 9/8

Apple seeks place atop market via high-visibility ads



INDUSTRY INSIGHT
Peter Stark
CIN Senior Editor

Apple Computer, Inc. carved out some instant recognition with its Big Brother-style television commercial during last year's Super Bowl.

Since then, the company has purchased a regular flow of glossy magazine inserts to bring its Macintosh computer to the attention of the populace.

Now the company is about to take another grandiose leap into the nation's living rooms.

Industry analyst and publisher Esther

Dyson told Computerworld Staff Writer David Olson that Apple will buy out the entire advertising run of *Newsweek's* special postelection edition. An Apple spokeswoman confirmed that speculation for *Computerworld*, but declined to reveal any specifics.

According to Dyson, the special *Newsweek* edition will cost Apple a cool \$1 million or more.

"[Apple] creates events out of [its] marketing, so it kind of gets double value out of its exposure," Dyson remarked. She noted that *Newsweek* has an "upscale" readership, exactly the kind of [audience] that Apple hopes will make its Macintosh the second standard of the personal computer industry and keep its long-playing

Apple II line playing longer.

By purchasing all the advertising space of one magazine edition, Dyson said, "I think you can get a consistent message across. You want to get the image of Apple as a big successful company."

The strategy also avoids competing in the same magazine with other computer companies and perhaps gains a little more leverage than a short and relatively expensive television commercial. Dyson noted that the magazine will be a special edition examining the state of the nation following the presidential election and therefore may hang around the parlor longer than most issues.

See APPLE page 94

FOR VAX USERS

WHY INVEST IN CAPACITY PLANNING?



Many organizations adopt the go-by golly approach to system capacity planning.

"Golly, where did all these users come

from?" and "By golly, it's time to expand the system."

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it has a well-staffed data processing department, and if it has system hardware vendors who always deliver on time, the go-by golly method may work. With enough money, people, and timely suppliers one can be as cavalier as one wishes.

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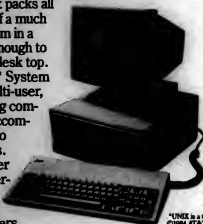
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Mapping out hardware growth



OUTSIDE LINES
David C. Dykstra

The rate of growth for computer hardware will equal the growth rate for software through the balance of the 1980s.

This prediction is contrary

to those of many experts who are predicting a faster rate of growth for the software segment, as compared with the hardware segment.

The 1983 \$136 billion U.S. computer/office automation industry comprised approximately \$95 billion for hardware and \$40 billion for software. Software spending

includes programming and development staff expenditures by computer users. Independent or contract software expenditures will continue to grow more rapidly than in-house expenditures.

Growth rate

Total software and hardware will both grow at an approximate rate of 25% per year through this decade. This projects a \$450 billion U.S. hardware industry and a \$190 billion U.S. software industry in 1990.

The ratio of monetary expenditures for computer/office automation products and services of about 70% for hardware and 30% for software has been maintained since the inception of the industry.

Twenty years ago, many experts were predicting a reversal in this ratio as the industry matured. They reasoned that after a large initial investment in hardware, users would spend increasing amounts for software to improve the performance of the hardware investment.

The hardware technology has rapidly changed, and users have spent increasing amounts of money on hardware to increase the performance of the software. No change is seen in this trend, even as it relates to smaller office automation products and personal computers. In fact, there is an even greater variety of hardware products available at the lower end of the market, and this will also continue.

The computer market consists of many specialists who are users. This is true at all ends of the market. At the newer low end, we have specialists in electronic spreadsheets, graphics, word processing, data bases and accounting. These specialists are the driving force in determining product demand.

This specialization and difficulty in learning new software products is a disincentive for any computer user wanting to spend more money or invest more time in acquiring additional software.

The experts who were and are predicting software dominance have stated sellers will sell hardware as loss leaders to obtain future software.

See SALES page 96

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Dykstra is president and owner of Dykstra Consultants in Newport Beach, Calif., and teaches at the Irvine, Calif., campus of National University. He is the author of *Computers for Profit*, recently published by Reston Publishing Co., a Prentice-Hall, Inc. subsidiary.

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COMPUTER INDUSTRY

Kaypro parts valued at \$6 million reported missing

By Kathleen Burton
San Francisco Bureau

SOLANO BEACH, Calif. — Allegations of tax "leakage" have been denied by Kaypro Corp. in the wake of the company's acknowledgement that computer components, worth as much as \$6 million, are unaccounted for and may have been stolen from a makeshift tent warehouse.

The parts, consisting mostly of unassembled computer components such as screens, chips, disk drives and circuit boards, had been stored temporarily in a large circus tent and in 40 trailers, pending construction of a permanent warehouse, according to a Kaypro spokesman.

It is not clear whether the loss was

a bookkeeping error or whether the missing parts were stolen, the company said. The San Diego County Sheriff's office confirmed that no theft report has been filed by Kaypro.

Kaypro, a supplier of portable personal computers, released few details of its apparent loss, saying it lacked sufficient information to assess any possible damage or theft. A detailed explanation will have to wait until the company's fiscal-year audit is completed in mid-October.

In response, however, to reports of an impending write-down of several million dollars in parts, the company released a statement saying, "Although there is the possibility that the amount of the loss, if any, when

determined could prove less than this [\$6 million] amount, it is possible that it may reach or exceed such levels."

Wian Schwartz, director of corporate communications at Kaypro, said that the company's storage area is reasonably secure. The circus tent where the parts were stored is in the middle of two fences, and the area is guarded around the clock and lit up at night, he said.

"Business as usual"

"So far, it's still business as usual," said Morey DeWald, a managing partner at the Newport Beach (Calif.) division of Peet Marwick Mitchell & Co., the accounting firm conducting the audit.

Ken Lim, senior analyst at Dataquest, Inc. in San Jose, Calif., said the "laid-back family attitude" at Kaypro, combined with the company's physical location on a bluff overlooking the Pacific Ocean may have contributed to the incident. Although the company's 10-acre facility is surrounded by a fence and 24-hour-a-day guards, "Anyone who's motivated could easily get in," Lim said.

John Dunham, analyst at Genetic Concepts, Inc. in Palo Alto, Calif., said he visited the firm several months ago. "It was an organized mess," he said, "with crates blocking the entrance to the front door." He added that the loss inventory may stem from problems the company had been having with faulty disk drives in May 1983, when there was a lot of traffic between Kaypro and independent dealers returning faulty units.



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COMPUTER INDUSTRY

GE, Ungermann-Bass plan factory local net venture

By David Gilman
CW Staff

CHARLOTTESVILLE, Va. — General Electric Co. and Ungermann-Bass, Inc. have signed a letter of intent to form a joint company to develop and manufacture local-area networks for use in factories.

The venture, subject to final approval, is expected to

produce its first product late this year or early in 1985, a GE spokesman said. The company will develop and market local-area networks to connect automated machinery and other intelligent devices, such as computer-aided design and manufacturing systems within a factory.

GE will provide the initial \$6 million in funding for the

project, while Ungermann-Bass will hold a 60% majority interest in the independent company.

Ungermann-Bass of Santa Clara, Calif., a leading supplier of general-purpose networks, will provide the technology for the venture as well as the initial staff.

The products will link with Ungermann-Bass' gen-

eral-purpose network and will be in accordance with General Motors Corp.'s Manufacturing Automation Protocol, a token bus industrial local-area network standard being proposed by GM and the National Bureau of Standards, according to Chris Pusser, manager of industrial communication products at GE's Industrial Automation

Systems Department.

Other companies, including IBM, are also known to be increasing their efforts to develop industrial networks. IBM recently acquired a \$6 million debenture from Sytek, Inc. of Mountain View, Calif., which provides an office-based network for IBM Personal Computers.

The products from the GE-Ungermann-Bass joint venture will be sold to equipment makers on a OEM basis. GE plans to market those products as components of its industrial automation systems.

GE, which has moved aggressively to automate its factories, has a networking product, GNet, that connects the various factory devices it manufactures. However, the products developed by the joint venture would enable factories to tie together devices such as robots and computers from different vendors.

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APPLE from page 83

While there are many questions remaining about Apple's ability to move up to the big business world, there is no doubt about the company's willingness to take a leadership position in the area of marketing.

With revenues at about the \$2.5 billion level, the company certainly has the resources and the distinguishable products to battle in the broader market for micro products.

The jury is still out on the value of applying mass-advertising techniques to the micro industry, however. Micros have not yet attained the necessity attached to the automobile, and the \$2,500-plus price of most worthwhile machines remains still too high for mass popularity.

Now if former Commodore Business Machines, Inc. chief Jack Tramiel were to live up to industry speculations and bring out a Macintosh-like product in the \$1,000 range, we might have a situation where the micro could bridge that potentially insurmountable business bridge. In that type of environment, the *Newswest* extravaganza would probably pay off handsomely.

Until that time, though, Apple still seems to be playing out a slightly schizophrenic strategy — pining for the legitimacy of the big business arena, while trying to sell the general public on the value of buying a Mercedes.

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COMPUTER INDUSTRY

AT&T from page 83

uct categories, it has no intention of entering the mainframe market, according to Casale. "We concede that the [mainframe] market is indeed established. The markets that will truly grow are in the areas of microcomputers, local-area networks and software: these are where we have targeted our systems. We don't see us in the near term going after the mainframe market."

Industry analyst Jonathan Fran of Paine Webber Mitchell Hutchins, Inc. commented that while such a decision "means AT&T can never be a sole source supplier to the Fortune 500 market," the areas targeted by AT&T Information Systems "are the growth markets that are up for grabs." Despite some industry speculation that AT&T might acquire an established mainframe vendor, Fran noted, "You can't really buy an installed mainframe base when IBM has an installed base 10-times larger than anybody else."

AT&T Information Systems has "lived through all the growing pains of a new company, but on a much larger scale," Casale said.

The recent announcement that 6,000 AT&T Information Systems positions will be included in the 11,000 positions being cut throughout AT&T Technologies, the parent company of AT&T Infor-

mation Systems, was a continuation of cost-cutting measures begun last year, Casale said.

With an organization he described as accountable and "toughened," AT&T Information Systems "expects to demonstrate that we will do the marketing jobs well; we're not going about it just to be an also-ran," Casale said.

AT&T Information Systems' ability to compete in an unregulated environment is

still a matter of debate among industry analysts.

Jeff Kaplan, a senior marketing analyst with International Data Corp. in Framingham, Mass., said his firm believes that "if AT&T doesn't have the strategies and organization in place right now, [it] will soon." Kaplan noted that the computer industry is moving in the direction of communications-based products, where AT&T has its strengths.

Less enthusiastic was Pe-

ter Lowber, an analyst with the Boston-based Yankee Group, who said he foresees "big trouble ahead if [it] doesn't get its act together." Lowber said the supermini-computer market should undergo dynamic changes next year and that AT&T's products introduced earlier this year were not impressive.

One area where AT&T Information Systems has made a recent strategic move was in a decision to develop a third-party marketing envi-

ronment [CW, Sept. 34], essentially emulating the structure that has developed for the third-party leasing of new IBM equipment and the resale of used IBM equipment.

Edward Cherney, president of CMI Corp., a leasing company working with AT&T Information Systems on the third-party effort, said only time will tell if AT&T Information Systems has the ability to compete in the computer industry.

SALES from page 86

ware sales; the hardware will be the razors and the software will be the blades. The reverse is and will be true. The successful companies use software to sell hardware, as evidenced by the recent demise of Software Centre.

Many products are bundled or sold together. This was the case with Osborne Computer Corp., which included application software with its computer units. Kaypro Corp. and many other small computer manufacturers are using this technique. Word processing specialty computer manufacturers and small business-computer systems integrators have bundled software and hardware for many years.

Like all segments of the computer industry, there is an increasing blur between software and hardware. Increased software capabilities and applications are being included with the computer read-only memory [firmware].

These predictions do not de-emphasize the importance of software or contradict the prediction that dramatic changes will occur in the availability of software products. There will be many new software products in the future, but they will be much less expensive.

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This is an ideal opportunity to become involved in the development and maintenance of hospital management systems. Prior experience of hospital systems is not required, but you must have enthusiasm and be able to quickly assimilate new ideas.

A relevant degree or equivalent, and at least 2 years programming experience using FORTRAN is essential for this post. A knowledge of Pathology procedures is desirable.

COMPUTER MAINTENANCE ENGINEER

Quote Ref: P/3054/CW

Apart from an appropriate engineering degree (or equivalent experience), you should have at least 3 years experience as a site/field engineer and detailed working knowledge of CDC band printers, matrix printers and SMD disk drives. Preference will be given to applicants with CYBER-18 or CDC mainframe experience. You should have a good understanding of communication techniques, in particular, RS232C/V24 interface, TDM and statistical multiplexers. Additional communications experience would be an advantage.

The salary range quoted for these two year contract posts (based on approximately 3.51 Saudi Riyals = \$1) includes a gratuity of one month's salary for every twelve months satisfactory service, payable at the end of your two year contract. Initial salaries will depend on the post and your qualifications and experience.

The comprehensive benefits package includes: free, fully furnished accommodation; four weeks leave for every six months service; free air fares (including leave flights) and extensive welfare and recreation facilities.

For further details, please write enclosing a full career resume and stating minimum acceptable salary to: Theresa Sutherland, Senior Personnel Officer, Allied Medical Group, 12/16 Grosvenor Gardens, London SW1W 0DZ, England. Please quote the appropriate reference number on all correspondence.

CLINICAL LABORATORY SYSTEMS TEAM LEADER

Quote Ref: P/3127/CW

You will be responsible for the control and supervision of a team engaged in supporting, maintaining and customising this package, plus the development of routines to satisfy the specialist needs of the local environment.

The ideal candidate will be fluent in FORTRAN, have in-depth experience in the development and/or support of the Control Data Corporation Pathlab package.

A degree or equivalent together with 8 years experience in data processing, including 3 years in systems analysis design and one year project management.

SYSTEMS SOFTWARE SPECIALIST/PROGRAMMER

(Hewlett Packard)

Quote Ref: P/3129/CW

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Position exists in Data Base Administration in an IBM environment. Includes the use of IBM PARTPATH Technology. Responsible for design, development and maintenance of data bases, development of standards and procedures. Knowledge of COBOL, PL/I, REXX, also experience in COBOL and DBL and project management essential.

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Minimum 2 years experience working with ACF-2 in the areas of product installation, systems analysis and system development. Knowledge of COBOL, DBL, REXX, and TSO/VS1. Experience with ACF/IMS, ACF/IGC, ACF/VS, Torgon, Pave and Data are preferred.

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Position provides software internal support to Hugen Underbills products. This includes vendor relations, problem determination and solving, and interfacing Hugen's products to IBM. Requires 1 year working experience with Hugen's Underbills Software, 1 year IBM Data Base Administration and 2+ years Assembler language.

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The successful candidate must have strong managerial and interpersonal skills coupled with a good solid business background.

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The successful candidate should have a BS degree or equivalent in Computer Science or Mathematics and a minimum of 5 years experience in scientific applications programming and be knowledgeable in a variety of computer software systems including SAS, GENSTAT, APL, PL/I, FORTRAN and TSO.

We offer a competitive salary and excellent benefits program. Qualified applicants should submit resume with salary history in confidence to: Mr. W.A. Scott, Personnel Manager, Schering-Plough Corporation, Box 2010, 1201 Clough Street, Kenilworth, New Jersey 07033. Principate Only.



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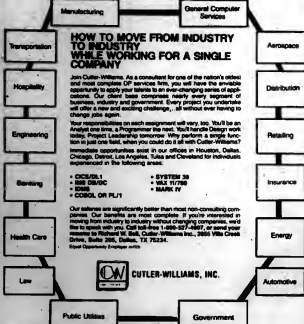
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Call for resume applications to the University of California, San Luis Obispo, Office of Information Systems, 1000 University Avenue, Suite 100, San Luis Obispo, California 93408. The position is a full-time, permanent position with a salary commensurate with the general education of the applicant and previous experience.

To assure full consideration, candidates who are interested in this position should send their resumes, which should be received by November 1, 1984.

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SYSTEMS PROGRAMMER V

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Responsibilities include development/support of major accounts business; negotiating past security agreements with selected hardware/software vendors. Responsibilities include Bachelor's degree, marketing/sales field, five to seven years' sales experience in corporate based climate; one to two years' managerial experience; solid background in micro-mainframe software; hardware applications, strong oral/written communication skills.

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Responsibilities include assisting business outside sales forces in major corporate account sales techniques; analyzing customer micro-computer needs. Responsibilities include Bachelor's degree, marketing/sales field, three to five years' sales experience in corporate based climate; solid background in micro/mainframe software; hardware applications; and strong negotiating skills.

Please send resume, including salary history, in confidence to: Human Resources Department, ComputerLand, Inc., 2300A California St., CA 94613. Only candidates who respond directly to ComputerLand Corporation will be considered for employment. We are an equal opportunity employer.

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HUGHES

PROGRAMMERS/ ANALYSTS

The Information Systems and Computing Department of Hughes Engineering Services and Support Division has excellent opportunities for Programmers/Analysts to become involved in the development of several new on-line business systems and to provide ongoing systems and applications support.

Our new facility in suburban Orange County in Southern California is seeking professionals with appropriate degree and/or experience in management information, logistics or manufacturing systems as well as experience in COBOL or FORTRAN. Experience with HP3000's, IMAGE, KANA, QUERY and VS800 is desirable. AISCAN, S00470 experience is a definite plus.

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Please send your resume to: Hughes Aircraft Company, Ground Systems Group, 13825CH, Dept. WC-16A, P.O. Box 6275, Fullerton, CA 92634.

HUGHES

GROUND SYSTEMS GROUP

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At the folks
who do it right!

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Senior Systems Programmer
Systems Analyst
Senior Programmer Analyst

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You can be part of this new project at its beginning stages, which will offer you opportunities as limitless as your own potential. In addition, you will receive a competitive salary and extensive benefits package. For immediate response, please forward your resume, stating salary requirements and position preference, to: Ms. Kathleen Brittain, Employment Specialist, Kentucky Fried Chicken, P.O. Box 52070, Department 201, Louisville, KY 40252. We are an equal opportunity employer M/F.



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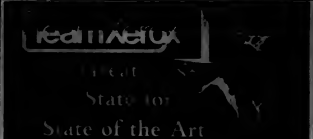
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|---------|------|-----------|---------|------|-----------|
| 4321 | 0.25 | 1 to 2 | 3032 | 1.5 | 1 to 32 |
| 4321-1 | 0.25 | 1 to 2 | 3032EX | 1.5 | 1 to 32 |
| 4321-11 | 0.35 | 1 to 2 | 3032N | 1.5 | 1 to 16 |
| 4321-2 | 0.50 | 1 to 4 | 3032LP | 1.5 | 1 to 16 |
| 4341-9 | 0.52 | 1 to 4 | 3032S | 1.5 | 1 to 16 |
| 4341-10 | 0.75 | 2 to 4 | 3032EX | 1.5 | 1 to 16 |
| 4341-1 | 0.89 | 2 to 4 | 3032J | 1.5 | 1 to 16 |
| 4341-11 | 1.1 | 2 to 8 | 3032L | 1.5 | 1 to 32 |
| 4341-4 | 1.18 | 2 to 12 | 3032M | 1.5 | 1 to 32 |
| 3021 | 1.2 | 2 to 8 | 3032P | 1.5 | 1 to 32 |
| 4341-5 | 1.45 | 2 to 12 | 3032Q | 1.5 | 1 to 32 |
| 4341-2 | 1.5 | 2 to 16 | 3032R | 1.5 | 1 to 32 |
| 4341-12 | 1.85 | 2 to 16 | 3032S | 1.5 | 1 to 32 |
| 3031AP | 2.0 | 2 to 8 | 3032T | 1.5 | 1 to 32 |
| 4341-1 | 2.1 | 4 to 16 | 3032U | 1.5 | 1 to 32 |
| 3022 | 2.5 | 2 to 8 | 3032V | 1.5 | 1 to 32 |
| *4341-2 | 2.7 | 4 to 16 | 3032W | 1.5 | 1 to 32 |
| 3033S | 2.8 | 4 to 16 | 3032X | 1.5 | 1 to 32 |

* Revised "C" MIPS rating for 1984

1984 First Year MIPS rating

| SYSTEMS | MIPS | MEGABYTES | SYSTEMS | MIPS | MEGABYTES |
|---------|------|-----------|---------|------|-----------|
| 470V7A | 4.5 | 4 to 16 | AS/690 | 2.4 | 4 to 16 |
| 470V7 | 4.5 | 4 to 16 | AS/692 | 2.9 | 4 to 32 |
| 470V8 | 5.5 | 4 to 16 | AS/693 | 5.2 | 8 to 32 |
| 5840 | 5.5 | 4 to 16 | AS/694 | 6.5 | 8 to 32 |
| 5840 | 5.5 | 4 to 16 | AS/695 | 6.4 | 16 to 32 |
| 5840 | 5.5 | 4 to 16 | AS/696 | 7.2 | 8 to 48 |
| 5840 | 5.5 | 4 to 16 | AS/697 | 8.0 | 8 to 48 |
| 5840 | 5.5 | 4 to 16 | AS/698 | 11.2 | 16 to 64 |
| 5840 | 5.5 | 4 to 16 | AS/699 | 18.2 | 16 to 64 |
| 5840 | 5.5 | 4 to 16 | AS/690 | 20 | 16 to 64 |

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spective computer system instruction
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